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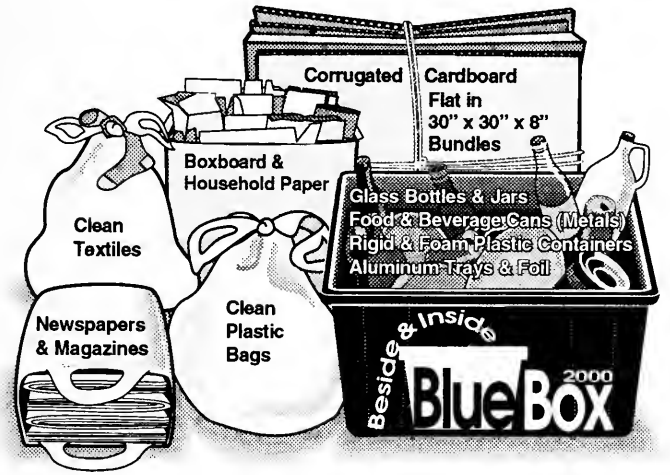
Blue Box 2000
The First Year



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Centre and South Hastings Waste Management

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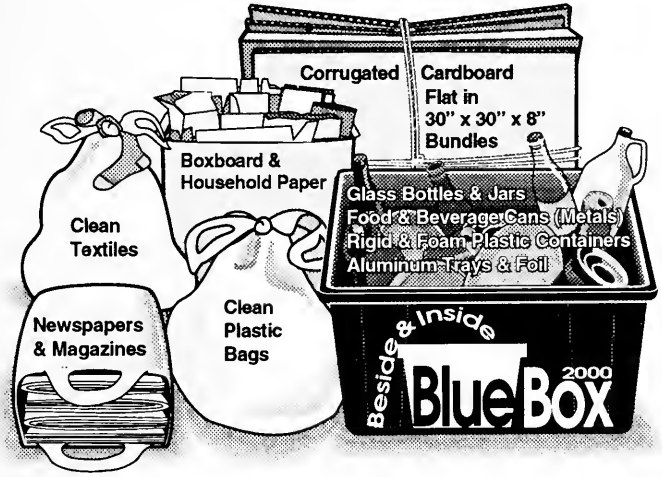

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Contents

Working Together To Reduce Waste

This First Year Report has been prepared and distributed as part of the Blue Box 2000 Program. It provides a snapshot of the evolution of a source-separated, multi-stream waste diversion system. The Centre & South Hastings Waste Management Board appreciates the support of the Ontario Ministry of Environment and Energy. The contents of this report are the responsibility of the authors.

Blue Box 2000

On November 18th, 1991 Quinte Regional Recycling, with the support of MOEE, launched the Blue Box 2000 recycling program to demonstrate how a traditional Blue Box program can be expanded to its maximum potential. Combined with backyard composting, waste reduction initiatives, and an expanded Blue Box recycling program, the goal of Blue Box 2000 is a 50% diversion in the household waste stream.

The first year of Blue Box 2000 has been a success. The public has shown itself able and willing to fully participate in a broad range of waste diversion programs. Diversion tonnage has gone up dramatically, while costs have come down. This report provides many of the findings and insights gained in 1992, the first full year of operation for Blue Box 2000.

Quinte Regional Recycling is a project of the Centre & South Hastings Waste Management Board which is a coalition of 15 municipalities with a population base of 95,000. Almost 40,000 recycling boxes have been distributed to 21,000 urban curbside, 4,500 apartments, 9,100 rural curbside, 4,200 rural depot households, and 1,000 IC&I establishments. The facility processes recyclables for an additional 17,000 households in neighbouring municipalities as well as a segment of the IC&I sector which trucks their own material. The Blue Box 2000 demonstration program was established in conjunction with the Ontario Ministry of the Environment (now the Ministry of Environment & Energy).

Lessons learned from Blue Box 2000

1. **There is no one single method or technology to reduce residential solid waste.**
   Blue Box 2000 takes a number of conventional waste reduction activities, pushes them to their logical conclusion, and reworks them into a comprehensive system.

2. **Conventional technology can achieve a 40%+ residential diversion rate.**
   Only minor adjustments were necessary to the physical infrastructure of the recycling facility and collection vehicles. Other systems, such as backyard composters, are simple, low-tech devices capable of handling a significant portion of the residential organic waste stream.

3. **The rollout of Blue Box 2000 was an easy exercise.**
   On the public side, people understood the message of Blue Box 2000 and happily did what was asked of them. Public surveys of attitudes indicate that people are satisfied with the level of effort required of them. From an operational point of view, managing this many streams of recyclables and turning them into marketable products is economically feasible and no major technical adjustments are required.

4. **People are willing to participate in a pre-collection sort of recyclables.**
   99% of the Blue Box set-outs are completed according to specifications. Very few Blue Box set-outs are rejected because recyclables have been improperly sorted by the householder.

5. **Market development for traditional and new materials requires industry involvement.**
   Brand-owner involvement is critical in developing markets for traditional and new materials. Brand owners are on the front-line of product stewardship from the perspective of the public and regulators. They have a strong interest in ensuring the recyclability of their products.

6. **A systems approach to waste diversion results in a favorable cost comparison to disposal.**
Blue Box 2000 is a cheaper system than collection and disposal at landfill, even with all subsidies removed. Individual components (Blue Box, backyard composting, HHW, waste reduction, etc.) should be examined more for how they contribute to a comprehensive mix of diversion strategies rather than as direct comparisons with disposal.

7. **Costs per ton decline with economies of scale.**
Actual costs tend to go down as more boxes are distributed, more materials are added, and capture rate increases. Municipalities should take full advantage of these economies of scale in collection and processing when negotiating these contracts.

8. **Systems evolve.**
The recovery rates for recyclable materials continues to change. Capture rates for traditional materials continue to improve with time. It takes more than a year for the public to become accustomed to the new materials.

9. **It is more efficient to sort some materials at the curb than at the processing facility.**
Some of the new materials require 100,000 to 200,000 pieces to make up a ton of material (ie. PS foam, mixed household paper). Pre-sorting by the public, and keeping the material separate during collection, makes it feasible to handle these types of materials efficiently and cost effectively.

10. **There is a synergistic effect in waste diversion.**
Public involvement, so essential in a source-separated, multi-stream system, is reinforced through all the programs. The cumulative results of personal efforts become readily apparent and give the diversion system credibility and reinforces the message of an integrated program.

11. **There are community spin-off benefits of the system.**
A multi-stream, source-separated system is a labour-intensive program. Over 30 people work on the collection-processing program, while several others are employed in coordinating roles, compost manufacturing and distribution, and separating textiles at a training centre for the severely employment disadvantaged.

12. **The program is ongoing.**
The many and varied components of a multi-stream system allow the program to continually evolve. Even the well established components, such as Blue Box recycling and backyard composting, are maturing. To date, the components have been steadily improving in terms of participation and capture rates. The system is expected to evolve over time in response to changing conditions, public attitudes, and other waste diversion initiatives to achieve a low-cost, fully integrated waste management system.

Program Overview

Blue Box 2000 was developed to meet needs specific to Centre & South Hastings. This has resulted in a unique structure that other municipalities may or may not find directly comparable to their own situation. Wherever possible, the data and program results are provided in a context that will allow for comparison. This section provides some of the background context.

Waste Diversion

- ◊ Blue Box 2000 is a source-separated, multi-stream system.
- ◊ The program builds on the existing Blue Box recycling and goodwill that it has generated.
- ◊ The Blue Box 2000 program rejects 1-stream, 2-stream and 3-stream centralized programs, with the concern that they: are too expensive; rely too heavily on an unproven technology; will produce end-market materials that would be considered contaminated by today's market's standards; and do not cause the public to recognize and assume responsibility for their own waste.
- ◊ The key to the success of Blue Box 2000 is careful public participation.
- ◊ The target for the system is to exceed a 50% diversion of the residential waste stream.
- ◊ The Waste Management Master Plan Steering Committee has adopted an official target of 70% waste diversion of both the residential and IC&I streams by the year 2000.

Components of the System

- ◊ Blue Box recycling with an expanded variety of recyclable materials and involving all sectors.
- ◊ Backyard composting by over 70% of the households.
- ◊ Household Hazardous Waste with a permanent depot that promotes reuse and recycling, plus 12 satellite depots to service the area.
- ◊ Industrial/Commercial & Institutional (IC&I) programs of recycling, reuse, and reduction.
- ◊ Waste Reduction activities for both households and IC&I.

Municipalities

- ◊ A municipal Board, representing 15 municipalities, oversees Blue Box 2000 activities.
- ◊ Waste management remains within the jurisdiction of the local municipalities. The County is not involved in waste management issues.
- ◊ Another 27 municipalities plus many IC&I establishments bring their material to the facility.
- ◊ Blue Box 2000 is a mixture of urban, rural curbside, rural depot, apartment, and IC&I activities.

Structure

- ◊ The recycling facility and equipment is owned by the municipalities indirectly through the Board.
- ◊ The contract for collection, processing and marketing is awarded to the private sector. Municipalities get the revenue from the sale of recyclables.

Waste Disposal

- ◊ Garbage collection and disposal is the jurisdiction of each municipality. There are 9 small landfill sites in the area which service the smaller communities. All 9 are without weigh-scales.
- ◊ Belleville, Trenton, and Sidney Township, representing over 70% of the population, ship their garbage out of County to a private landfill site. Tipping fee at the site is in the $90 per ton range.

Recycling Program Organization

Centre & South Hastings Waste Management Board
The Board is responsible for implementing the 3Rs, including the Blue Box program. This is a 7-person Board set by 15 municipalities to implement 3R programs. The Board was established by the Centre & South Hastings Waste Management Steering Committee which is preparing a Waste Management Master Plan. The Board members are: Georgina Thompson (Chair), Jack Arthur (Vice-Chair), Murray Workman (Sec.-Tres.), Gibson Allen, Gerry Boyce, Brenda Brett, and Gerald Reid. Board staff for 1992: Robert Argue (Recycling), Sandy Smith (IC&I), Marvin Tucker (Compost), Alfred Von Mirbach (Waste Reduction), Jeanne Vilneff/Doug Solway (HHW), Gary Vardy (Analyst).

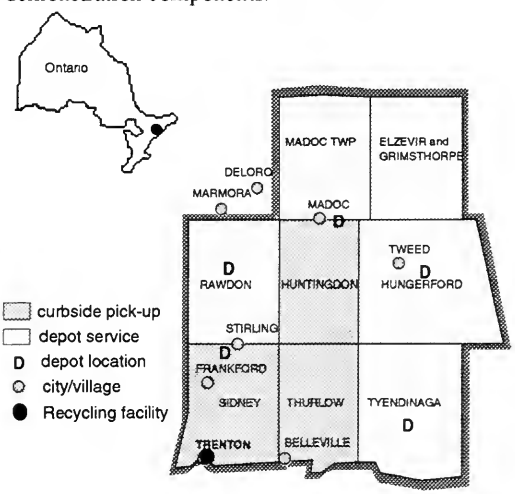
Operating Committee
This is established as a working committee for the demonstration year. It consists of Robert Argue (REIC Ltd.), Cheryl Nash, Catherine Daniels (Program Advisor S-E Region, MOEE), Jane Lister (WRO, MOEE), Herb Lambacher and Richard Barrett (HGC Management), Joe Hruska (OMMRI). Jill Dunkley, the Board Recycling Coordinator, has been on the Committee starting in 1993.

HGC Management Inc.
HGC is the contractor for the Blue Box program. It is responsible for collection, processing, and marketing on behalf of the Board. Herb Lambacher is the president of HGC Management. Richard Barrett is the operations manager. Jennie Yarrow handles the Hotline, radio and weigh-scale.

REIC Ltd.
REIC had the contract for Recycling Co-ordinator for the Board from 1989 to the end of 1992 and currently co-ordinates the demonstration program for MOEE and prepared the promotion and education material. Robert Argue is the principal involved.

Ontario Ministry of the Environment & Energy
The MOEE has established guidelines of 25% waste diversion by 1992, and 50% diversion by the year 2000. To determine if these goals can be met by rolling out conventional waste reduction methods, the MOEE is sponsoring the Blue Box 2000 demonstration components.

Plant Staff
1 Operations Manager
1 Office staff/Hotline staff
1 Foreman/skid-steer operator
1 Baler operator
12 material handlers
11 drivers
1 driver/processing operator/maintenance
1 day shift sorting/baling, 1 shift baling only



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Blue Box Recycling

Blue Box 2000 is a systems approach to waste diversion. The following 5 pages briefly describe other aspects of the program: waste reduction, backyard composting, IC&I waste diversion, and a household hazardous waste program. The bulk of this report examines Blue Box recycling.

Blue Box Collection

There are 3 aspects to expanding the Blue Box program:

- ◊ Increase the participation rate and involve all sectors.
- ◊ Deepen the capture rate of currently-collected materials.
- ◊ Broaden the types of materials that can be included in the Blue Box.

Participation Rate:

Participation rates (based on a 6-week period) have been measured at 85% to 91%, although some households are participating infrequently and are not recycling all the possible materials. In addition to having more householders fully participate, Blue Box 2000 has involved apartments, schools, institutions, and businesses. Anyone on a municipal route can have a Blue Box.

Capture Rate:

A waste composition study conducted in 1991 found that only 60% of the available materials were being recycled. A number of education and promotion activities that can increase both participation and capture rates were implemented. These include newsletters, cable-TV spots, and regular news releases and updates. Based on waste consumption studies conducted in the spring and fall of 1992, the average total capture rate is 80% for conventional materials and 62% to 66% for all recyclables.

Blue Box 2000 Materials

Plastics

- ◊ PET bottles
- ◊ rigid plastic bottles and tubs (HDPE, PVC, PP, LDPE)
- ◊ film plastic (LDPE)
- ◊ foam plastic and rigid trays (PS)

Paper fibre

- ◊ newspaper
- ◊ corrugated cardboard
- ◊ boxboard
- ◊ phone books
- ◊ magazines & catalogues
- ◊ mixed household paper

Metal

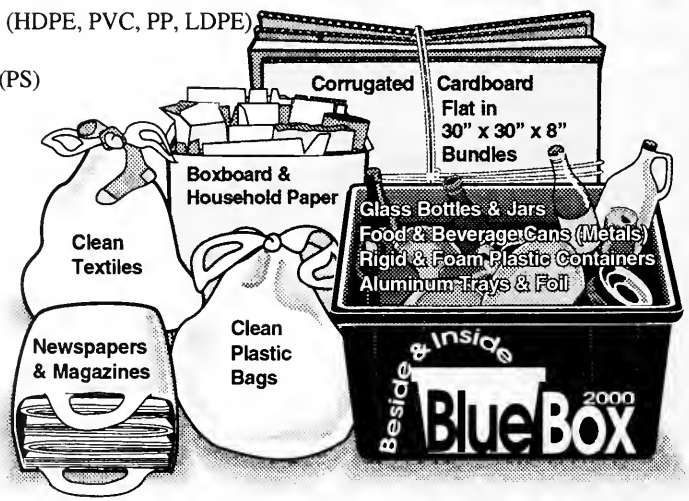
- ◊ steel cans
- ◊ aluminum cans
- ◊ aluminum trays and foil

Glass

- ◊ clear & coloured glass

Textiles

Householder Setout



Office of Waste Reduction

A Waste Reduction Coordinator was hired to help promote the shift from a consumer to a conserver society. The mandate of the office is to identify and implement local waste reduction and reuse initiatives by focusing on the first 2 Rs. The work is concentrated on promotional and educational opportunities, infrastructure developments, and coordinating activities with other Recycling Board staff, groups and agencies.

Results

- **Newspaper Articles** - a monthly article on local waste reduction opportunities was printed in 6 local newspapers.
- **Waste Reduction Guides** - waste reduction guides were prepared for different sectors, such as offices, municipal offices, schools, manufacturing plants, day care, and health care facilities. The guides list local resources and programs, and help local businesses and institutions implement appropriate reduction and reuse programs.
- **Centre Hastings 3Rs Centre** - a reuse/recycling centre was established at a local landfill site.
- **Reuse Directory** - three different reuse directories were prepared for Belleville, Trenton, and Madoc/Marmora/Tweed. They were designed to be kept in the front of phone books, and listed places that accept, buy, or sell used household items, as well as some general reuse suggestions.
- **Junk Mail** - the public was invited to phone in or leave their name on a list to get off direct mail marketing lists and/or a stop delivery list for The Shoppers Mart.
- **Brochures** - brochures were developed on grasscycling and cloth diapering alternatives.
- **Cable TV Spots** - a number of half hour shows were produced together with a local cable television station, covering topics such as less wasteful shopping habits and cloth diapering.
- **Other activities** - the Office was also responsible for a wide range of on-going activities related to promoting and supporting reduction and reuse, both locally and at the provincial level.

Lessons Learned

- Don't implement a specific program unless you know you will have the time and resources to provide on-going support and improvements.
- It is easy to design programs for the "converted", but you also need programs that will motivate the uninitiated.
- Look for ways to tie into and work with existing organizations to make resources go farther and have individuals and groups within the community take ownership of projects.
- Spend time developing a good working relationship with the local media.
- Work with local schools and school boards to support them in getting the message out.
- One very productive activity involves acting as a resource person to individual municipal councils and staff to encourage them to implement policies and bylaws that support 3R programs.
- Cutting corners on the quality of promotional information doesn't pay off in the long run (e.g. stickers used for a "Save a Bag" campaign were faded and torn within three months).
- The amount of grass clippings being landfilled warrant allocating considerable resources to promoting "Don't Bag It" campaigns.

Backyard Composting Program

The YIMBY Program (Yes In My Back Yard) had a goal to get 80% of single family homes participating in backyard composting. Of the 30,000+ single family households in the study area, 6,000 were already composting, so an 80% target rate meant getting an additional 18,000 households participating in the program.

It was decided to offer a basic unit for free and deliver the composters to the door, where possible. The basic unit was either an Ecobalance unit or a reused barrel. Three different local suppliers of barrel units were involved in the program (Bio Keg, Ross Roller, Good Earth). Residents were also offered a number of different "designer" composters at subsidized rates, including plastic and cedar units and a number of different yardwaste composters and vermi-composting units.

Coordination of supply and distribution was carried out by a local company, "Organic Waste Busters", set up specifically for that purpose, which had over 40 people on payroll at the peak distribution period. All residents were sent a flyer at the start of the program with information on the composters and a number they could phone to ask for a composter. This was followed up with a variety of communication and delivery methods, including door-to-door contact and delivery, telephone contact with delivery, and temporary depots in rural communities.

An extensive support system was set up, including a hot-line, brochures, advertisements, articles, and a network of master composter volunteers. A detailed data base was established listing each household, which type of composter(s), as well as other information such as prior composting experience or reasons for not accepting a composter.

Results

- Over a 3 month period in the summer of 1992, 17,600 new composters were distributed.
- Of the total composters distributed: 13,000 were free basic units, 4,000 were "designer" units (costing $12), 100 were cedar units, and over 100 were yardwaste units. 3,000 households bought a kitchen bucket for $2.00.
- 2,500 composters were distributed at 5 depots held in the rural areas at the start of the program.
- 14,650 of the composters (~85%) were delivered to the door.
- When making door-to-door contacts, up to 40% were not home on the first pass, and 20% could not be contacted. 28,707 households were approached, and 23,014 were contacted (69% of total).
- Total costs (before grants) to supply and deliver the basic composter was ~$35 per unit.
- Promotional costs were about $2.00 per unit.
- General office costs to set up and supervise the program and provide on-going support were $34,000 in the first 9 months, and is estimated at $55,000 in subsequent years.
- Of those households contacted through door-to-door delivery techniques:
  - ◊ 46% were not composting, but took a composter (42% urban, 52% rural)
  - ◊ 19% were already composting and still took one (15% urban, 26% rural5
  - ◊ 15% were already composting and didn't take one (16% urban, 12% rural)
  - ◊ 20% said no to composting (26% urban, 10% rural).
- Factoring in households contacted by phone and depot, 85% of those contacted took a composter.

Lessons Learned

- Most households will accept a composter if you deliver to them a basic unit for free.
- Convenience is essential, including delivery to the door.
- Ensure that people are provided with adequate information on how to set up and use the composter, using brochures, hot-lines, and at the point of delivery.
- Provide in-depth training to delivery staff, since they will have to field many of the initial questions that will determine if a householder participates in the program or not.
- The program should start in spring to provide a few months for the program to get going prior to summer holidays, and to capitalize on spring gardening fever.
- The best time to make telephone or door-to-door contacts is in the evening and on weekends. Even then, there was a high absentee rate. A combination of door-to-door and phoning worked best.
- Using local people to organize and run the delivery program not only provides considerable local employment, but also ensures that the delivery people are familiar with the area and can design an appropriate delivery program.
- Set up and maintain a detailed computerized data base to track contacts, deliveries and additional information obtained during the initial contact or delivery.
- No one method of distribution will reach everybody; a variety of methods is necessary.
- Since some people will object to the functionality (no trap door or too small) or aesthetics of the basic composters, it is useful to offer an upgraded unit. Other alternatives, such as a wood composters, larger yardwaste composters, and vermi-composters or balcony units offer choices but also lead to increased explanation time, problems with maintaining inventory, and a more complicated data base.
- Temporary depots for picking up of composters worked much better than anticipated in rural areas, and helped to cut down on otherwise time consuming contacting and delivering.
- A network of composting volunteers is useful to get the program going, and more importantly, to ensure that an on-going support system is in place.
- It is important to provide for some form of survey or monitoring system to assess how well the composters are being used, and identify any common problems to be addressed by an area-wide education campaign.
- Fewer residents than expected complained about having had to buy their composter in previous years. To address there concerns, all residents who were already composting were offered a second composter for free to help them deal with leaf and yardwaste.

Blue Box 2000 IC&I

A coordinator was hired to work with the IC&I sector on all 3Rs. While not the direct mandate of the Board, the IC&I sector generates a large portion of the waste and contributes to the economies of scale. Revenue received from recycling IC&I material pays for the position. The activities include:

- Encouraging participation of all local businesses and institutions in the Blue Box program.
- Holding seminars for local businesses, and conducting presentations and workshops for schools.
- Working with organizers of local public events to provide recycling services.
- Putting out newsletters, developing a local waste exchange, and producing a waste audit guide.
- Providing on-site 3Rs assistance to local businesses and institutions and setting up a data base.

The Results

- Over 1000 businesses on municipal routes are now participating in the curbside blue box program.They can not put out OCC, but can include CPO and fine paper.
- IC&I waste has decreased by an estimated 30% (presumably added by the recession.
- About 1/3 of the total tonnage processed at the recycling plant is from the IC&I sector. Most of it comes from large contract haulers or self haulers, as opposed to smaller IC&I establishments serviced with curbside blue boxes.
- Tipping fees were instituted for loads of IC&I material over 1000 lbs. delivered to the facility.
- Most fairs and special events have set up recycling facilities, with varying degrees of success.
- By working directly with Canada Post, a pilot project was started with all local post offices setting up recycling bins both in the lobby and behind the counter.
- Some successful matches were achieved with the local waste exchange, but more work will have to be done to promote this service and tie in with other waste exchange networks.
- The two newsletters that were published were positively received and resulted in many calls for more information or on-site visits by the IC&I Coordinator.

Lessons Learned

- Provide information and assistance applicable to the type and size of business being approached. Offices don't want to hear about what manufacturing plants can do, and small businesses don't want to hear about setting up recycling teams to do 6 month waste audits.
- Encourage businesses to network with each other and share problems and solutions — they are more likely to listen to each other.
- Make sure the newsletter captures their eye, and is very readable and relevant.
- Seminars were not well attended, in spite of considerable amounts of advance publicity. Make sure you have a "hook" to interest them in coming, and consider phoning business contacts who have already expressed an interest in 3Rs.
- Most businesses will participate if given the opportunity, but they need a surprising amount of reinforcement and one-on-one contacts to get them involved and keep them participating.
- Work closely with local haulers and business associations (i.e. Chamber of Commerce) to ensure good cooperation and effective program delivery. Support private sector 3Rs opportunities.

Household Hazardous Waste

Although household hazardous waste makes up a small portion of the total waste stream, it has a significant impact on environmental quality. The Centre & South Hastings program will service the area with a combination permanent depot in Belleville and a network of 12 "satellite sites" serviced by a "toxic taxi". The focus at the depot will be reuse and recycling of material rather than disposal.

The program will provide public education on alternative non-hazardous products, and will encourage the setting up of point-of-purchase return programs and the diversion of material to these programs. The program is also investigating the possibility of providing services to IC&I small quantity generators of hazardous waste on a fee-for-service basis.

Status

- Although the program has been in the planning and development stages for over two years, it has encountered many delays in getting necessary approvals, largely because of the newness and uncertainty of the program.
- The permanent depot in Belleville was completed in March, 1993. It should start accepting material in April.
- As much material as possible that ends up at the permanent depot will be offered for reuse to municipal works departments, painters, cleaners, landscaping companies, and any other interested groups.
- Once approval has been received for the satellite depot sites and the toxic taxi, a collection schedule from the 12 satellite depots will be organized.
- Where possible, materials that are being diverted through province-wide point-of-purchase return programs (currently oil and anti-freeze) will not be accepted through this municipal program.
- It is recognized that small quantity generators from the IC&I sector can often not afford to have a private contractor remove their hazardous wastes, but are also not allowed to use municipal HHW programs. Work is being done to see if they can be included in our program on a fee-for-service basis. The efficiencies of scale associated with small quantity generators tying into the municipal program should allow both them and the municipalities to benefit.
- A major public education campaign will be launched at the same time as the hazardous waste collection program opens, focusing on freeing your home from hazardous wastes.

Blue Box Recycling: Collection Program

Ten trucks are used to provide curbside collection from approximately 35,500 single-family households and apartments units, and to service 3 rural drop-off depots. A key component of the Blue Box 2000 Program is the emphasis on preparation of recyclables by the public. There is also an increase in sorting by the truck driver.

The public puts out material in 6 groupings. These are then separated into 7 compartments on the truck (see diagram next page). Additional trucks are required to accommodate increased collection times due to higher set-out rates, greater weight/volume per set-out, and increased separation.

Collection Route Data

	No. Truck Days/Wk	Average Km/Route	Total Pass-Bys	Pass-Bys /Truck-day	Ave Hours /Truck-day	Pass-Bys /Hr/Truck	Boxes /Hr	Set Out Rate
Belleville	15.3	48	11,932	778	8.3	93.3	55.8	60%
Sidney	7.3	106	5,826	794	8.1	97.8	56.2	57%
Trenton	6.3	29	5,577	881	8.4	104.9	58.3	56%
Totals	29		23,335	805	8.3	97.0	56.5	58%

The Average Blue Boxes picked up per hour by trucks do not include travel time to or from the route.

Truck Compartment Volume

Compartment	% based on volume	% based on weight	lb/yd3	kg/m3
Cans + Foil	23%	12%	92	55
Clear Glass	3%	15%	778	461
Coloured Glass	1%	5%	636	377
HH + BB + Tex	22%	13%	109	65
Mags + News	24%	45%	339	201
OCC	8%	6%	122	72
Plastic + Foam	19%	4%	39	23

Based on collection of 1875 Blue Boxes average weight 15.2 lbs/box.

The Truck Compartment Volume chart shows that measuring by weight doesn't always reflect the true impact of different materials on the collection. Volume should also be considered.

Average Set-out Rate

Date	19-Feb	26-Feb	5-Mar	12-Mar	19-Mar	26-Mar	Average
Truck Wt (lbs)	4920	4480	5140	5860	4420	5420	5040
# of hhlds	581	581	581	581	581	581	581
# of set-outs	329	328	329	354	331	361	339
Lbs/set-out	15.0	13.7	15.6	16.6	13.4	15.0	14.9
Set-out rate	57%	56%	57%	61%	57%	62%	58%

This chart looks at the results of the spring 1993 Participation Study of 581 households in Belleville. It shows the average weight of materials in a full truck (5040 lbs), the average lbs/set-out (14.9 lbs) and the average set-out rate of 58%.

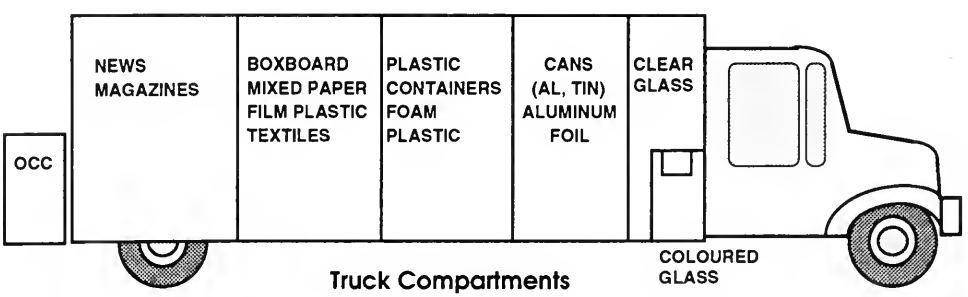
Collection Equipment

- **10 trucks**
  Labrie top-loading, one-man trucks. Single side-loading, dual-drive, 4 partitions.
  International chassis, model 4900. 1 compartment modified for coloured glass.
  A box for OCC hangs off the back of the trucks. Two of the trucks have a bubble tail-gate which expands the capacity of the truck. Experimentation is ongoing with the trade-off between the number of truck compartments and processing requirements. For example, a trial is underway to determine the trade-off in co-mingling the cans and plastic on the truck and then separating them at the plant.

- **depot containers**
  Otto MSD 95 Gallon Domestic Cart for glass, cans, and plastic.
  Poly-weave bags are used as a liner for the depot carts that contain lightweight material such as plastic containers and cans. When full, the re-usable bags are tied off and stored. This reduces the number of depot carts required.
  A trailer body is used to store paper products at depot sites.

- **blue boxes**
  A-1 Products 12-gallon container. Larger, 15 gallon containers are used for some IC&I set-outs.

- **apartment containers**
  A-1 Products 8-gallon container for each apartment unit. Large (10'x3'x3') metal containers with 3 compartments have been made to specification for apartment collection/storage of colour-separated glass, boxboard, and OCC. Roll-out carts are used for other material. Apartment residents are requested to colour-sort their glass. Drivers hand-load this material into the truck as a precautionary measure.



Truck Compartments

Description of Processing Centre

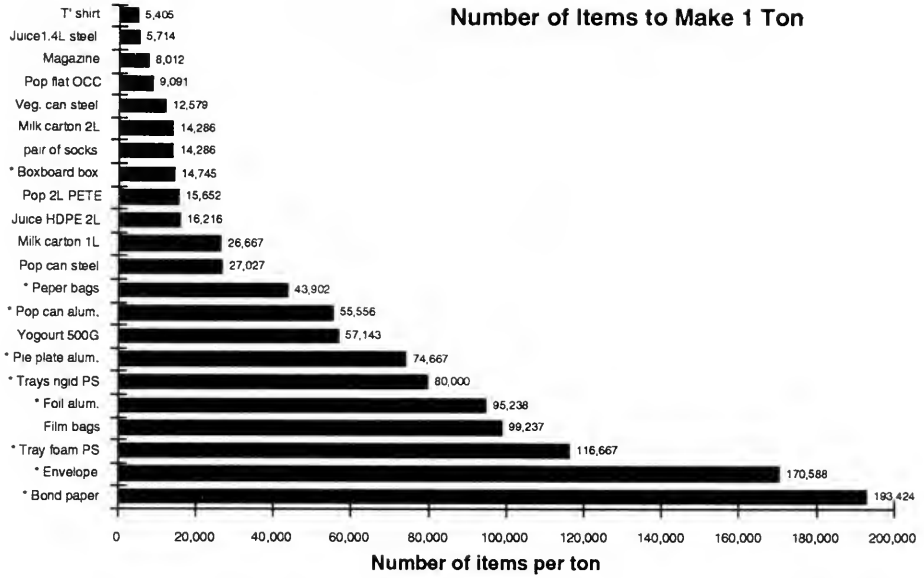
The processing centre is used to separate, clean, and prepare the material for shipping to market. The main plant is 175' by 85' clear span (14,875 sq. ft.). The only fixed feature is the conveyor pit. All other features are flexible in placement and configuration. To handle the increased material flow due to Blue Box 2000, several modifications were made;

- A bunkered dumping area was created outside to receive the can and plastic compartments of the trucks.
- An outdoor hopper/conveyor system was installed to move loose materials into the plant.
- A dual conveyor system with a common platform was installed for moving and sorting materials.
- Large bins (16 and 9 cu. yd.) were fabricated to temporarily store the sorted material.
- Some of the baled material is stored outside until shipping quantities are reached.

Operation

- **Comingled ONP and OMG** are dumped on the floor in the plant. The material is lifted by a loader onto portable sloped sorting tables beside the conveyor pit of the baler. The material is cleaned of plastic bags and contamination to de-inking quality. Originally, the magazines were separated into gaylords. Specifications now allow magazines to remain mixed with the news. Any OCC in the news stream is thrown behind the pit to be baled later.
- The **OCC** bin is removed by lift-truck from the truck back and dumped into the OCC pile within the plant. The material is later baled with the IC&I OCC.
- The **Boxboard** compartment is dumped in the plant. Material is lifted by a loader into a hopper feeding one of the sorting conveyors. Film plastic (within plastic bags) is removed and thrown into a bin. The only sort of the plastic is a squeeze test of the bags to ensure that they contain no foreign objects. Also removed on the conveyor line are textiles (also bagged), polycoat (milk cartons), and any large volume of fine paper and CPO collected from IC&I establishments. Any contamination is removed from the remaining boxboard/mixed paper stream, including any plastic, metal or heavily contaminated paper. Boxboard and mixed household paper falls off the end of the conveyor. Textiles are picked up by Tri-County Environmental Training Centre, a local employment-disadvantaged training centre, and are sorted, upgraded and sold.
- **Cans** are loaded from the outdoor bunker into a hopper feeding the second sorting conveyor. This stream is cleaned of any contamination and runs over a magnetic head which separates the steel from the aluminum.
- **Plastic** containers are fed into the second conveyor when cans are not running. The material is cleaned of contamination and hand separated and thrown into bins by resin type: PET, PVC, HDPE, and tubs. The end of the line (negative sort) is foam and rigid polystyrene.
- **Glass** is dumped into outdoor bunkers — flint (clear), and coloured (green and amber). It gets loaded onto dump trailers for shipping. No sorting is required at the plant.

Mobile cages (bins) are used to receive and store separated materials that don't go directly to the conveyor pit. The cages hold enough material for a bale. A skeleton evening shift wheels the filled bins to the conveyor pit where they are emptied through a trap door.



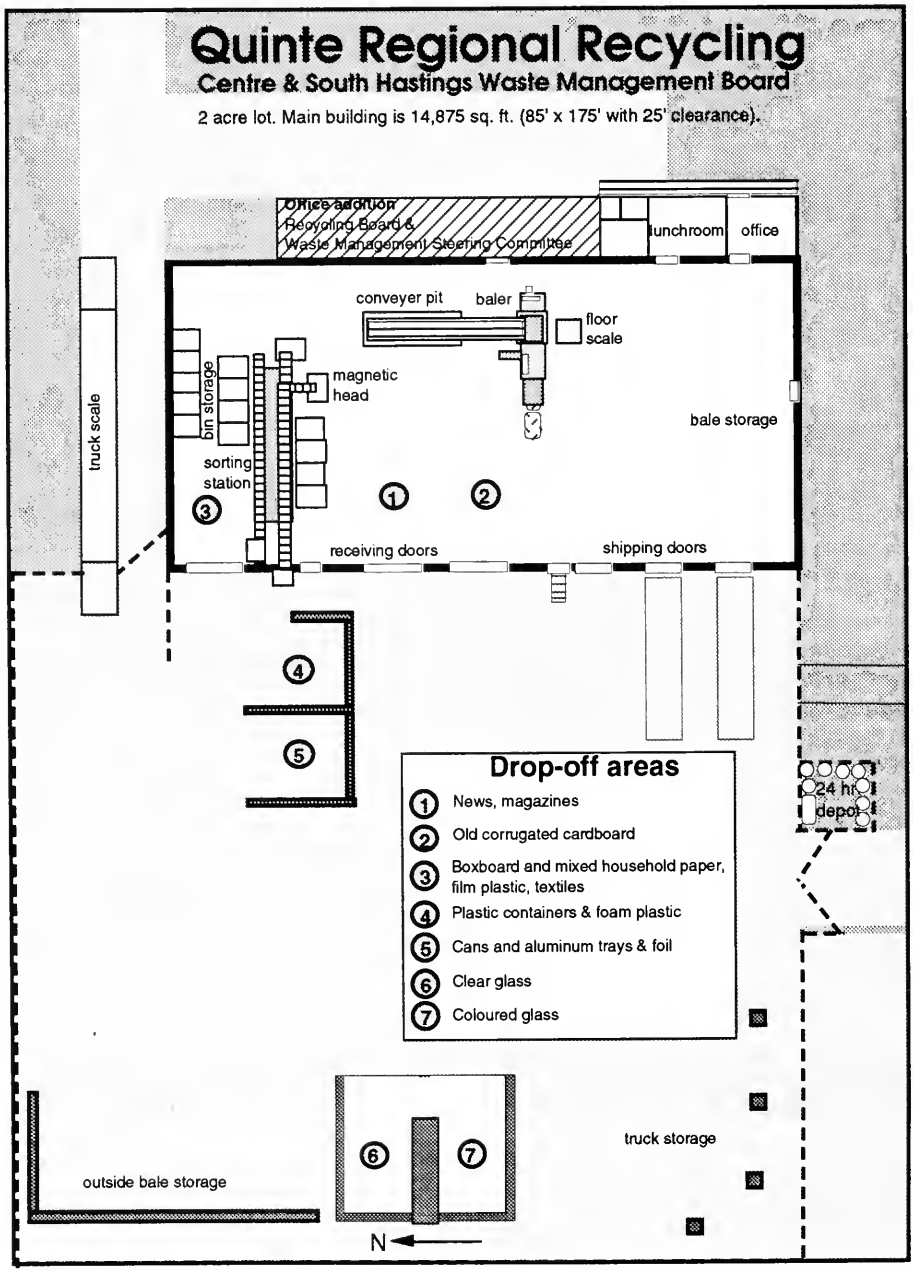
The above chart looks at how many objects it takes to make 1 ton of material. Considering that each object (ie. a piece of paper, foam tray, or sock) will have to be removed from a mix of materials, this type of information is useful when designing an efficient sorting system. While some materials lend themselves to a "positive" sort because of their size (eg. PET bottles by hand) or characteristics (eg. steel cans with a magnet), many materials are too fine or too hard to differentiate from a co-mingled, mixed, or contaminated stream. These materials (indicated with an "*") can only be removed through a "negative" sort which means that the material is cleaned of other materials and contamination, but doesn't require every object to be hand picked.

The approach of Blue Box 2000 to handling the great number of individual items is 3-fold:

1) Have the public do the primary sort and set material curbside in 6 different groupings.
2) Collect material, keeping the materials separate in 7 compartments on the truck.
3) Establish sort lines to optimize the amount of "positive" sorting and "negative" sorting, depending on the nature of the material.

Processing Centre: Lessons Learned

- ◊ The processing centre could be relatively easily modified to accept the new materials and increased volume of production. Storage space for over 20 different materials was the greatest concern.
- ◊ The success of the centre to process clean, marketable materials relied on the public set-out and multi-compartment truck collection.
- ◊ It is difficult to conceive of processing the variety of materials in a co-mingled or 2-stream system without major inefficiencies or significant quantities of contaminated or off-spec material.


Quinte Regional Recycling
Centre & South Hastings Waste Management Board
2 acre lot. Main building is 14,875 sq. ft. (85' x 175' with 25' clearance).
Office addition
Recycling Board &
Waste Management Steering Committee
lunchroom
office
conveyer pit
baler
floor scale
magnetic head
bin storage
truck scale
bale storage
sorting station
receiving doors
shipping doors
24 hr depot
Drop-off areas
1 News, magazines
2 Old corrugated cardboard
3 Boxboard and mixed household paper, film plastic, textiles
4 Plastic containers & foam plastic
5 Cans and aluminum trays & foil
6 Clear glass
7 Coloured glass
truck storage
outside bale storage
N

Processing Centre Equipment

- **baler**
  An Economy wide-mouth horizontal baler, model # 5042E. System includes auto-tie, fluffer, in-floor conveyor, 60 HP main motor, 9" piston. The baler will process newspaper, cans (steel and aluminum), plastics, and cardboard. A modification was made to the receiving mouth to make reception of OCC easier. A further modification was to add a new extension that allows for denser bales.
- **magnetic separator/conveyer**
  Made by Tim-Tech to specifications. Conveyor is 20' 6" long, 66" high. Belt is 30" wide, speed 75 ft. per min. Head pulley contains a 20" permanent magnet. This conveyor is also used to sort plastic. A second conveyor with a variable speed control was added for the boxboard stream.
- **2 skid-steer loaders**
  Case 1845C, 60 HP, solid tires, catalytic convertor. One with regular bucket, one with grapple-bucket. Set of forks.
- **fork-lift**
  Clark propane, model GCX 20, solid tires, catalytic muffler.
- **floor scale**
  Active Scale model ASF-56-6. Platform 6'x6', 6000 kg capacity. With UMC 600 digital indicator. Used to weigh bales as they come off the baler.
- **truck scale**
  Active Scale. Platform 10'x70'. Printer and indicator and video. Used to weigh all in-coming and out-going trucks.
- **bins**
  Locally-fabricated metal bins receive sorted material. The bins hold baling quantities, have wheels to roll to conveyor pit, and trap-door with a sloped bottom for emptying.
- **sorting tables**
  Wooden sorting tables site-built for ONP. Tables have a wide mouth, sloped surface, and capacity for a full bucket load.

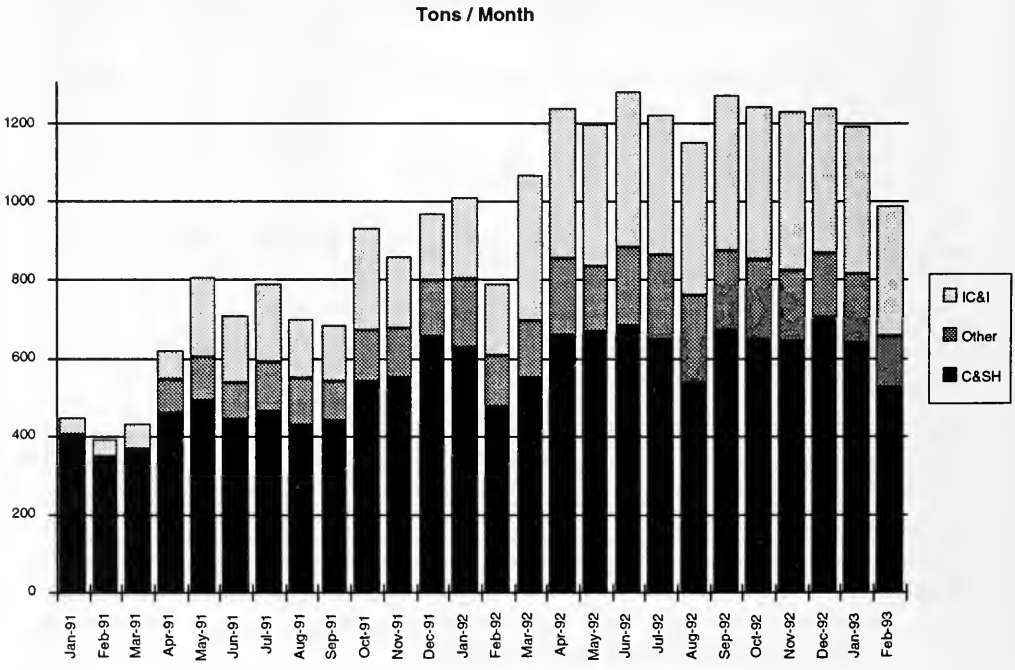
Density of Material in Bins and Bales

	# of Bins per Bale	Ave Wt Of Bale	Vol Of Bale Cu. Yds.	Lbs/Cu Yd In Bin	Lbs/Cu Yd In Bale	Compression Ratio
Cans (Tin)	0.7	1600	2.6	153	615	4.0
Cans (Alum)	0.7	848	2.6	81	326	4.0
Milk Cartons	2	1655	2.6	53	637	12.0
Film Bags	2	1595	2.3	51	693	13.4
HDPE	1	745	1.6	48	465	10.0
PET	1	560	1.6	36	350	10.0
PVC	1	560	1.6	36	350	10.0
Tubs	2	560	1.6	18	350	20.0
PS	2	430	1.6	14	269	20.0

Blue Box 2000 Production

Monthly Production

The following chart tracks the monthly flow of material through the recycling facility. It shows the monthly production in tons over a 2 year period from January 1991 to February 1993. Collection of Blue Box 2000 materials started the end of November 1991. Tonnage is summarized in 3 categories: from Centre & South Hastings; from other municipalities; from the IC&I sector delivered to the facility. All 3 sectors have shown a steady increase in volume. Since the launch of Blue Box 2000, most other municipalities who are responsible for their own collection and delivery to the facility have added the new materials to their collection program.



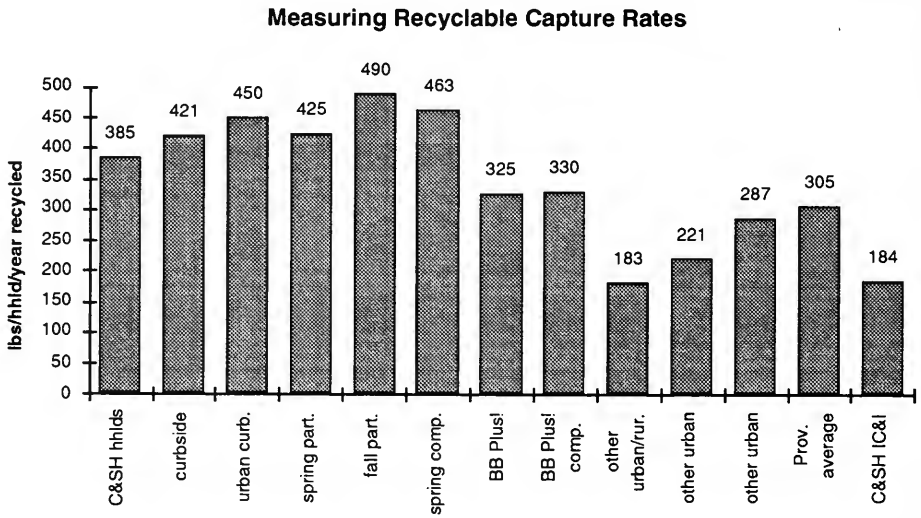
An analysis of the daily plant throughput shows that it went from a low of under 20 tons per day in early 1991, to close to 60 tons per day for much of 1992. While these are average figures, the impact on the plant can also be measured during peak days. These are generally days that follow a previous week's holiday or snow storm. In those cases, the one-day tonnage has exceeded 90 tons. It is interesting to note that the combined tonnage for the 2 weeks during and after a storm or holiday does not appear to drop below the average 2-week tonnage. This indicates that people are storing their material.

Material Production

The following chart itemizes the monthly collection (in tons) of the various Blue Box 2000 materials for 1992. It provides the average monthly tonnage, a breakdown by percentage by material, as well as the total production and the amount of waste sent to disposal. The average residue (non-recyclables) from the plant is less than 2% of the total throughput. **The figures are for all material processed at the plant, including other municipalities and IC&I,** and not just material from Centre & South Hastings. Some monthly tonnage figures include an adjustment made as a result of correcting an earlier pre-shipment estimate.

Production Tonnage

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	%
News	242	211	235	323	303	337	289	265	333	312	321	308	3,480	36.9%
Glass	144	99	134	161	155	175	207	166	178	167	144	166	1,896	20.1%
Tin	99	105	95	88	76	75	75	71	69	88	97	107	1,046	11.1%
Aluminum	3.4	3.2	6.5	5.4	0.7	7.4	5.6	7.5	6.0	6.6	4.7	5.2	62	0.7%
PET	11.3	6.2	9.7	12.1	7.7	15.3	11.7	11.5	11.2	9.4	10.3	10.8	127	1.3%
HDPE	10.5	20.4	8.7	10.0	15.9	15.2	15.2	13.0	14.4	14.8	11.2	12.6	162	1.7%
PVC	0.3	0.6	2.9	0.4	0.3	0.7	0.4	0.5	0.4	0.5	0.4	6.6	14	0.1%
Tubs	0.9	0.9	0.8	1.0	1.0	1.0	1.1	1.2	1.4	1.5	4.6	1.2	17	0.2%
Boxboard	94	80	103	120	112	120	139	114	139	146	142	152	1,459	15.5%
Poly-Milk	1.6	0.8	0.5	1.3	8.6	3.6	3.0	2.2	2.6	2.8	3.0	6.1	36	0.4%
OCC	123	40	29	42	67	76	60	57	53	44	20	38	648	6.9%
Polystyrene	1.3	1.6	1.1	2.2	1.7	1.5	1.9	1.4	1.8	2.8	1.2	2.0	21	0.2%
Textile	8.1	3.9	11.8	10.5	16.6	11.2	13.0	9.8	11.4	12.5	11.1	8.6	128	1.4%
Magazines	35	11	24	20	19	16	13	13	15	22	8	9	204	2.2%
Film-LDPE	6.3	9.9	10.3	14.0	6.4	12.8	10.9	9.3	10.3	10.0	18.6	14.4	133	1.4%
Total Curbside	781	592	674	811	789	867	846	741	846	839	798	848	9,432	69%
Total IC&I	207	181	369	386	361	391	359	390	395	390	410	371	4,211	31%
Total Recycled	988	774	1,042	1,197	1,150	1,259	1,205	1,131	1,242	1,229	1,208	1,219	13,643	
Waste	19.3	15.5	22.4	21.6	33.7	17.3	15.9	18.0	18.0	20.1	22.5	19.0	243	
Waste as %	1.9%	2.0%	2.1%	1.8%	2.8%	1.4%	1.3%	1.6%	1.4%	1.6%	1.8%	1.5%	1.8%	



A useful way of measuring the success of a program is to look at the capture rate of recyclable materials expressed as the total lbs captured per household. Care has to be taken to ensure that comparisions are based on the same information base. For example, some of the variables that effect the outcome include: curbside vs depot; rural vs urban; materials included; promotion and education; volume of ONP. This chart shows the average lbs/hhld/yr of recyclables measured in different ways within the study. Also included are measurements of the previous Blue Box Plus! program, and data from other programs in Ontario that are collecting conventional Blue Box materials.

Blue Box 2000

- **C&SH hhlds** is the average for Blue Box 2000 municipalities in Centre & South Hastings: 385 lbs/hhld/yr
- **curbside** is data from all the villages, towns, cities, and rural curbside (no depots): 421 lbs/hhld/yr
- **urban curb.** is for all households, city and suburban, with curbside service: 450 lbs/hhld/yr
- **spring part.** is for urban curbside based on the 6-week spring participation study: 425 lbs/hhld/yr
- **fall part.** is for urban curbside based on the 6-week fall participation study: 490 lbs/hhld/yr
- **spring comp.** is for urban curbside based on the 6-week spring waste comp. study: 463 lbs/hhld/yr

Blue Box Plus!

- **BB Plus!** is the average for the Blue Box Plus! program for curbside: 325 lbs/hhld/yr
- **BB Plus! comp.** is the average for the Blue Box Plus! program waste comp study: 330 lbs/hhld/yr

Other Municipalities

- **other urban/rur.** is for a central Ontario community of mixed urban and rural collection: 183 lbs/hhld/yr
- **other urban** is for an eastern Ontario community of mainly urban collection: 221 lbs/hhld/yr
- **other urban** is for a small central Ontario city with a mature program: 287 lbs/hhld/yr
- **Prov. average** is the average for all Blue Box programs in Ontario: 305 lbs/hhld/yr

- **C&SH IC&I** represents the tonnage of material delivered to the facility by the IC&I sector expressed as per hhld: 184 lbs/hhld/yr

Blue Box 2000 Impact

The Blue Box program was initially designed in 1989/90 as a conventional weekly, curbside collection program. This plan was modified in the fall of 1990 before start-up to include boxboard, rigid plastic, and OCC, and was called Blue Box Plus!. **Blue Box 2000** was started in November 1991. The following chart compares the needs of the various programs.

Blue Box System Requirements

	Blue Box	Blue Box +	Blue Box 2000
# of trucks	6	8	10
# of materials handled	5	12	20
plant capacity (tons/day)	20	35	60
processing space		for extra materials	
storage space		for extra materials	

Blue Box 2000 results are for the first year — material volume and trucking continues to grow as the program matures

Results

Results indicate the public is responding well to the greater level of effort required. Average curbside collection in Belleville/Trenton/Sidney is running at 450 lbs/hhld/year (with ONP contributing ~170 lbs/hhld/yr to this weight).

The following chart compares monthly costs averaged over January to December for 1991 and 1992. Costs are net of revenue but before any grants or subsidy, and are for contractor charges for collection, processing, marketing, administration, and hotline. Costs include maintenance and maintenance reserve, but do not include any capital or depreciation or municipal administration costs. Processing charges and revenue from other municipalities and IC&I material that is dropped at the facility have been backed out. If IC&I tonnage, including processing charges and revenue, had been included, the municipal costs would be lowered by about $10 per ton. Adding the municipal overhead (insurance, promotion, staff salaries, etc.) would add about $10 per ton.

Average Program Operating Costs	(C&S Hastings figures only)		
	1991	1992	% increase
tons/month	466	626	34%
# of households	33,500	39,000	16%
contractor costs/month	$78,112	$94,268	21%
net revenue per month	$16,768	$18,515	10%
net cost per month	$61,344	$75,753	23%
$/ton	$132	$121	-8%
$/hhld/yr	$21.97	$23.31	6%

Municipal Budgets

Cost calculations aside, the bottom line for municipalities is, how much does the municipality pay? The reality for the municipalities of Centre & South Hastings is that they pay for all waste diversion activities as part of an overall budget that is separate from and in addition to their regular waste management budget. The 1993 budget for the Recycling Board provides an example of the cost of waste diversion with the Blue Box 2000 demonstration grant expired. This budget is a global budget for all waste diversion activities, including:

- ◊ Blue Box recycling (expanded materials, all sectors)
- ◊ Compost maintenance (staff and promotion support for the 24,000 backyard composters)
- ◊ Waste Reduction (part-time coordinator and program support)
- ◊ Household Hazardous Waste (establishing a central depot and 12 satellite depots)
- ◊ IC&I activities (IC&I coordinator and support).

The 1993 budget (before subsidies, but after revenue and after the share of other municipalities are removed) is approximately $1,200,000. This budget includes all operating costs and overhead for the Board activities, as well as $150,000 in contingency/capital reserves/mortgage. Approximately 17,500 tons of waste are diverted through the Boards activities. This figure includes 7,500 tons Blue Box, 6,100 tons composting, and 3,800 tons of IC&I material brought to the recycling facility. This works out to $69 per ton diverted ($88/ton with the IC&I material removed). With the provincial subsidies currently in place (Centre & South Hastings is at a 40% MRSP rate for much of 1993), the actual cost to the municipalities comes down to about $47 per ton diverted.

Of course, these figures are greatly skewed by the very low cost per ton of the backyard compost maintenance program, but they are also skewed by the high cost per ton (in the $2000 range) of the Household Hazardous Waste program. What these figures do show, is that a broad based diversion program, as a whole, is cheaper than the typical disposal program on a ton for ton basis.

The City Of Belleville provides a good case study example. The city's share of the 1993 Waste Diversion budget is $238,643, with an estimated diversion of 4,784 tons through the 12,330 Blue Boxes and 7,585 backyard composters (based on a measured 450 lbs/hhld/yr Blue Box and an estimated 530 lbs/composter/yr). The diversion budget works out to ~$50 per ton. To contrast this cost, the city will be spending $615,000 for garbage collection and an estimated $1,116,000 for tipping (12,000 tons x $93/ton) for a total disposal cost of $1,731,000 or $144 per ton.

Another case study shows the direct benefits to the Thurlow Township landfill site. It has been given extra life as a result of the recycling program. Prior to recycling, the landfill was given 17 years. Two years later, the life is now reported to be 22–25 years.

Waste Diversion Budgets: Lessons Learned

- ◊ A more aggressive Blue Box recycling program can take advantage of the economies of scale and bring the average per-ton cost down.
- ◊ Blending all aspects of the waste diversion program in a single budget brings the cost of waste diversion below that of waste disposal on a per-ton basis.

Processing & Collection Time Requirements

Material Stream	Av. Monthly Sorting Production			
	tons	hours	tons/hr	hrs/ton
News+magazines	307	294	1.04	0.96
Cans (steel+alum.+foil)	92	219	0.42	2.37
Plastic: HDPE/PET/PVC/PS/Tubs	28	277	0.10	9.79
Boxboard/paper+textiles+film	146	681	0.21	4.65
Glass	158			
OCC	54			
IC&I material	351			
Loader/baler		730		
Lead hand		212		
Clean-up/repair/other		234		
Total	1137	2649	0.43	2.33

Collection	
Tons/hr	0.385
Hr/ton	2.60
Boxes/hr	55.8
Lbs/setout	13.8

Based on Belleville data (Sep. & Oct. 1992)

It can be difficult to compare recycling costs of one municipality to that of another. The above charts examine the time requirements for collection and processing. These are average monthly figures for the different material streams. The total processing averages 2.33 hours per ton of material. Collection (not including travel or dumping time) averages 2.60 hours per ton collected. Some of the production streams have shown a dramatic improvement. For example, in the initial program, boxboard required over 15 hours per ton with a "positive" sort. That has been reduced to under 5 hours per ton.

It is important to remember that there are other impacts on the municipal system other than by weight. The impact of many materials is based more on volume of material or by the number of items that have to be handled by hand-sorting (such as plastic containers).

Waste Disposal and Diversion

The charts on the next page illustrate the difficulty in trying to identify residential waste diversion figures. Sidney Township (pop. 16,000) is the only municipality in Centre & South Hastings with disposal weigh-scale data going back to 1989, prior to diversion activities. Collection and the landfill are operated by the same private-sector company. 1989 provides a base from which diversion can be measured. The upper chart documents average weekly disposal tonnage by month. This is illustrated in the graph at the bottom. (Average weekly tonnage was used to eliminate the effects of 4 and 5 collection periods in each month.)

The middle chart, Sidney Diversion (tons), illustrates diversion based on current and targeted measurements and estimates. Based on 1992 recycling data and an estimate of composter use, Sidney should have a current 1993 diversion of 47% compared to 1989. The target, a mature program reinforced with municipal regulatory measures, could exceed 60% diversion. In fact, the first 2 months of 1993 are on track for the estimated diversion. However, the first few months of 1992 were also on track, but the year ended with a low diversion rate of only 26%. One can be creative thinking up explanations. For example, the especially wet summer of 1992 had householders cutting (and bagging) their grass one or two times a week well into the fall. This followed several years of near-drought conditions where little or no cutting occurred from July on.

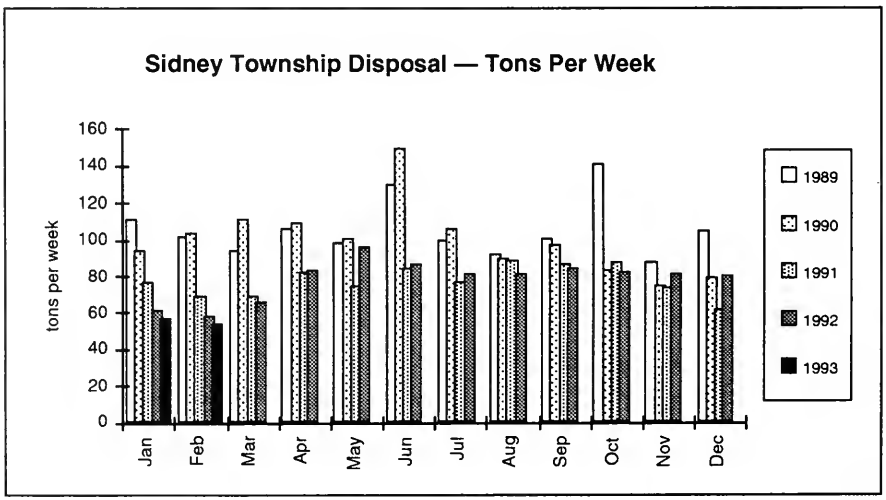
What this really points out, however, is that measuring garbage generation and diversion is a complex exercise. External factors, seasonal variations, or data collection quirks can throw off measurements whether they are over a few weeks or over several years. Caveat emptor.

Residential Waste Disposal — Sidney Township

disposal Sidney	tons/wk 1989	tons/wk 1990	tons/wk 1991	tons/wk 1992	tons/wk 1993	% Red. '89–'92	% Red. '89–'93
Jan	111	94	76	62	57	44%	49%
Feb	102	104	69	59	54	42%	47%
Mar	94	111	69	65		30%	
Apr	106	109	82	83		22%	
May	98	101	75	97		2%	
Jun	130	149	84	87		34%	
Jul	100	106	77	82		18%	
Aug	92	90	88	81		13%	
Sep	100	97	86	84		16%	
Oct	140	83	88	82		41%	
Nov	87	75	74	81		7%	
Dec	105	79	62	80		24%	
Total	5,492	5,195	4,036	4,082		26%	
% reduction base '89		5%	27%	26%			

	Sidney Diversion (tons)				baseline
	recycle	compost	reduction	diversion	generation
current	1,268	1,142	110	2,519	5,492
%	23%	21%	2%	46%	
target	1,652	1,508	165	3,325	5,492
%	30%	27%	3%	61%	

Sidney tonnage (recycling and disposal) based on weight-scale data for 5,900 households.
Current diversion based on 1992 recycled tonnage (430 lbs/hhld/yr) & 4308 composters @ 530 lbs each.
Target diversion based on 560 lbs/hhld/yr recycling and 4308 composters @ 700 lbs each.



Participation Study

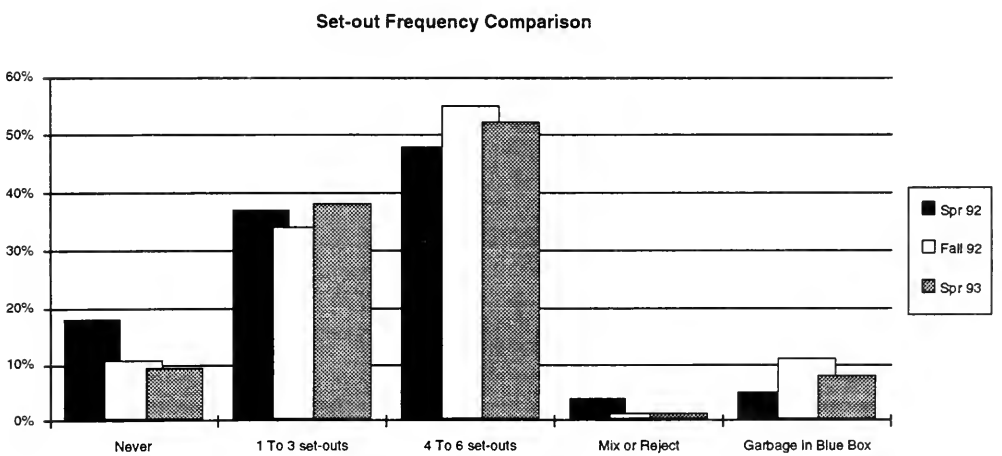
Participation studies of 1200 households have been conducted in Belleville and Trenton covering 3 different 6 week periods. Information was gathered on the fullness of Blue Box set-outs, the variety of materials included in the box, as well as the frequency of set-outs. A data collector accompanied the driver and recorded on a prepared sheet the following information for each household on the route:

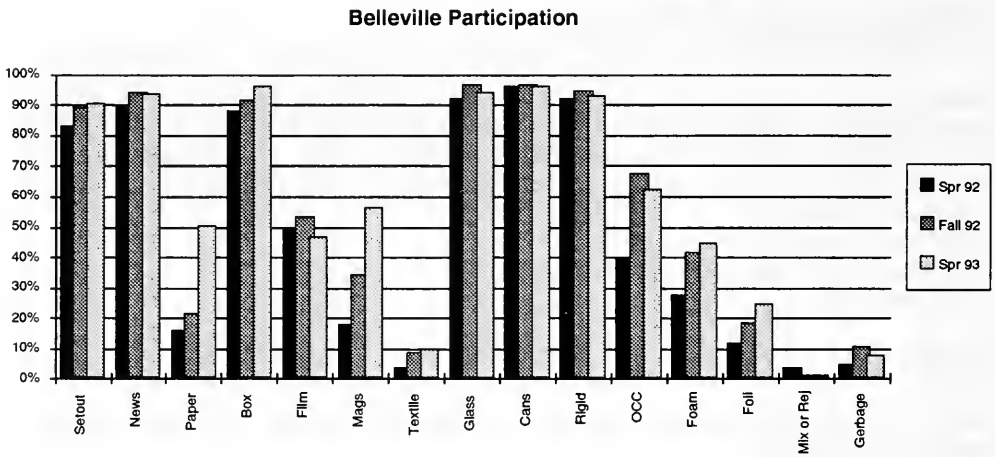
a) blue box set-outs
b) materials contained in the set-out (12 categories)
c) mixed or poorly separated materials
d) contaminants

Results

The chart below compares the set-out frequency of 3 of the studies in Belleville — the spring and fall of 1992 and spring 1993.

- Up to 91% of households put out their Blue Box at least once in the 1993 study, up from 84% from a year ago.
- The average weekly set-out was in the 58% to 62% range.
- The average lbs per set-out was 15 lbs.
- Mixed set-outs refers to those households that did not set out their Blue Boxes to Blue Box 2000 specifications. This was reduced from about 4% of set-outs to 1%.
- Contaminated Set-outs included material not acceptable through the Blue Box 2000 program. Between 4% and 9% of boxes had unacceptable material, such as window glass or aerosol cans, (compared to 22% — 28% measured in the 1991 Blue Box Plus! study).





The above chart compares the set-out frequency of the different materials for the participating households in Belleville over 3 study periods. It shows what percentage of participating households set out a given material at least once in the 6 week period. This gives an indication of the household recognition factor. It does not indicate information on capture rate of material. For that, it is necessary to conduct a waste composition study (see next section).

By comparing the results, it is possible to measure the rate of improvement in recognition of the categories of recyclable material. The trend is to an increase in participation. Conventional Blue Box materials (ONP, glass, cans) are the highest, with a 94% to 97% participation rate. The Blue Box Plus materials also exhibit a strong showing; OCC at over 60%, boxboard at 92% to 96%, and rigid plastics at 95%. The "new" Blue Box 2000 materials lag behind, but show a strong improvement from the spring to spring. Film at 50%, foam at over 40%, magazines at over 50%, and household paper at 50% are the most active of the new materials. Textiles and aluminum trays and foil remain the lowest participation rate.

Bi-Weekly Collection

Bi-weekly Blue Box collection (one every 2 week) has been considered an option in some areas of the Province to reduce collection costs. The experience in Centre & South Hastings would indicate that it is less an option, at least in urban areas, for a Blue Box 2000-type program. This is because a majority (~70% of participating households) are putting out boxes weekly. These boxes are "over-full" with the bagged and boxed materials on or around the Blue Box. As the capture rate of the new materials increases, the setout rate will increase and the blue boxes will become even fuller. Bi-weekly collection would greatly overload the existing blue boxes or require new, larger storage and set-out units.

Participation Studies: Lessons Learned

- ◊ It takes time for the public to get used to new materials. Participation improves over time and has shown no sign of leveling off.
- ◊ The public understands and cooperates in preparing material in the proper way.
- ◊ Set-outs increase as people get used to the new materials and boxes fill up faster.
- ◊ Some materials are more difficult for people to get used to and require greater promotion.

Waste Composition Study

Waste Composition Studies are used to identify the materials in the household stream — both Blue Box materials and garbage. The purpose of a Waste Comp is two-fold: to identify the capture rate of Blue Box materials, by material type and function use, that are not being separated from regular garbage; and to generate immediate and accurate residential waste composition data specific to the Centre & South Hastings area.

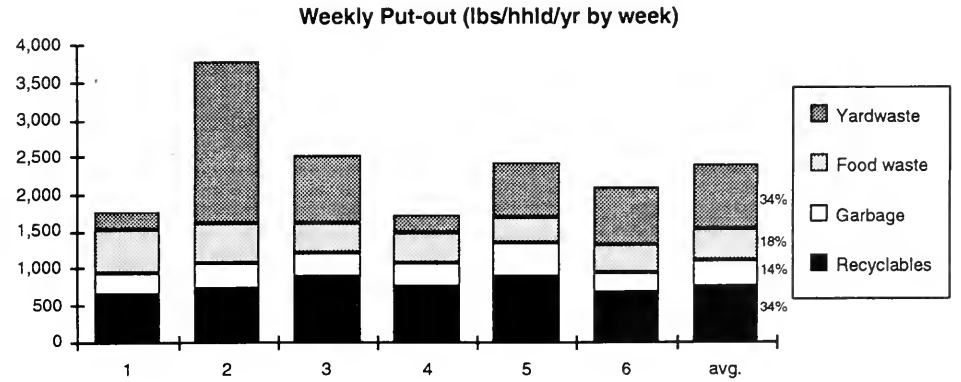
The Waste Comp presented here represents a 6 week period in April & May, 1992. Garbage and Blue Box contents from 50 households were collected and sorted into over 100 categories of recyclable and other waste. These 50 households were located in the Trenton participation study area, and were selected to proportionally represent three different levels of Blue Box participation. These levels of participation are as follows:

a) households that participated more than 3 times over the 6-week participation study (Type 3)
b) households that participated 1-3 times over the 6-week participation study (Type 2)
c) households that did not participate at all during the participation study (Type 1)

During collection, the contents of individual households Blue Boxes were emptied into a clear plastic bag, and labelled Type 1, 2, or 3. Garbage bags were also marked according to household type. Large bulky items were not picked up by the study crew, but their presence at the curb was recorded on the weekly collection form.

Results

- Blue Box 2000 materials (dry recyclables) represented 34% of the residential stream.
- Kitchen and yardwaste represented 52%. Note the heavy yardwaste, especially during week 2, which followed a beautiful Easter long weekend. This helps to emphasize the point that any "snap-shot" is subject to many variables.
- "Other" waste represented 14% of the household stream.
- Total estimated household stream (Blue Box plus garbage) was 2177 lbs/hhld/year.
- Type 2 and 3 households showed similar capture rates (68% & 69%), implying that the set-out level is more dependent on volume of materials available rather than the level of participation.



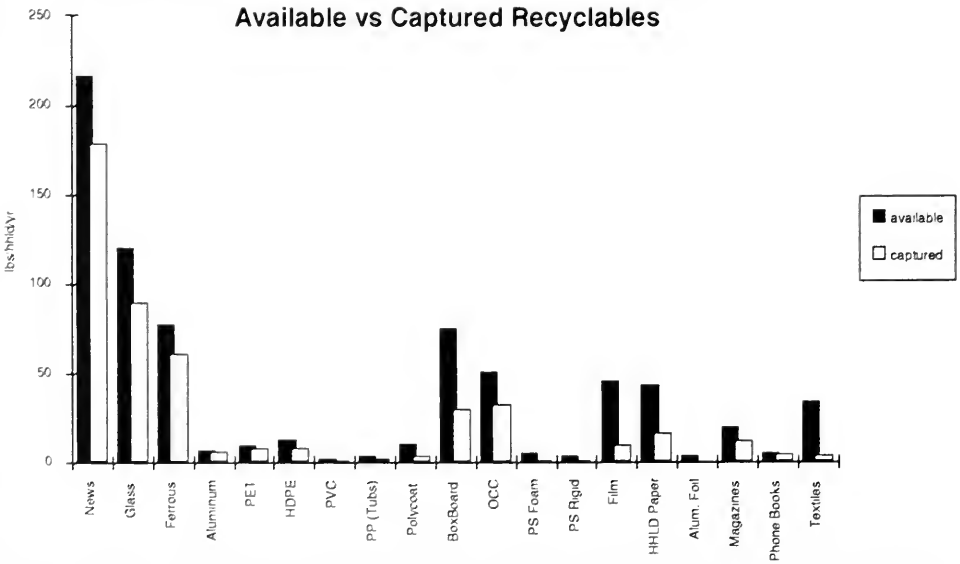
Capture Rates

- The overall capture rate of Blue Box 2000 materials, including non-participants, averaged 62.0%.
- Capture rate for materials varied considerably. It is interesting to note the change in capture rate compared with the Waste Comp study conducted in 1991. The chart below shows how capture rates increase over time, and "last year's new materials" become "this year's old materials".

Waste Comp Study Capture Rate

	1991	1992
Conventional materials	71%	79%
Blue Box Plus! materials	62%	71%
Blue Box 2000 materials		62%

Conventional materials includes news, glass, cans, and PET
Blue Box Plus! materials also include rigid plastic containers, boxboard, and OCC



The above chart compares the available recyclable materials vs the actual amount captured through the Blue Box program. From this chart it is evident that there is a lot of potential for increased diversion in the film plastic and household paper streams.

The following 3 pages contain more detailed information derived from the spring waste composition study. The information includes, by material and type: the captured and available materials expressed as lbs/hhld/yr; the percentage capture rate for each material; the percentage that material represents of that category (recyclable, non-recyclable, kitchen & yardwaste); and the percentage of the total household waste stream (excluding C&D and bulk items).

Blue Box 2000 Recyclable Materials

Material	Type	captured lb/hhld/yr	available lb/hhld/yr	Percent Captured	% of recyclables	% of all waste
News		**178.6**	**216.7**	82.4%	**29.04%**	**9.96%**
Glass	Soft Drink (Deposit)	0.9	0.9	100.0%	0.12%	0.04%
	Soft Drink (Non-Dep.)	15.1	17.9	84.1%	2.40%	0.82%
	Domestic Beer (Dep.)	0.8	2.9	27.1%	0.39%	0.13%
	Water	0.1	0.2	49.5%	0.03%	0.01%
	LCBO Beverages	21.2	28.5	74.4%	3.82%	1.31%
	Other Beverage	14.1	17.2	82.1%	2.31%	0.79%
	Food	33.0	46.8	70.7%	6.27%	2.15%
	Non-Food	2.8	3.9	71.3%	0.52%	0.18%
	Pharmaceutical	1.5	1.8	82.9%	0.24%	0.08%
	Subtotal	**89.6**	**120.2**	**74.5%**	**16.10%**	**5.52%**
Ferrous	Soft Drink	22.4	26.2	85.2%	3.51%	1.20%
	Other Beverage	7.6	8.7	87.5%	1.16%	0.40%
	Food	27.7	36.3	76.1%	4.87%	1.67%
	Non-Food	3.0	6.5	46.3%	0.87%	0.30%
	Subtotal	**60.6**	**77.8**	**78.0%**	**10.42%**	**3.57%**
Aluminum	Food (Lined)	0.2	0.4	59.9%	0.06%	0.02%
	Non Food (Lined)	0.0	0.0	100.0%	0.01%	0.00%
	Water	0.0	0.1	0.0%	0.01%	0.00%
	Juice	0.0	0.1	26.7%	0.01%	0.00%
	Soft Drink	4.5	5.1	88.1%	0.68%	0.23%
	Domestic Beer	0.8	1.2	71.4%	0.16%	0.05%
	Imported Beer	0.1	0.1	100.0%	0.02%	0.01%
	Other Beverage (Dep.)	0.0	0.0	0.0%	0.00%	0.00%
	Other Bev. (Non-Dep.)	0.0	0.1	0.0%	0.01%	0.00%
	Subtotal	**5.8**	**7.1**	**81.7%**	**0.95%**	**0.32%**
PET	Water	0.1	0.1	86.0%	0.01%	0.00%
	Juice	0.4	0.5	89.3%	0.06%	0.02%
	Soft Drink	6.2	7.0	88.8%	0.94%	0.32%
	LCBO Beverage	0.4	0.4	92.0%	0.05%	0.02%
	Other Beverage	0.0	0.0	0.0%	0.00%	0.00%
	Food	0.3	0.5	52.5%	0.07%	0.02%
	Non Food	0.3	0.7	41.5%	0.09%	0.03%
	Subtotal	**7.6**	**9.2**	**83.4%**	**1.23%**	**0.42%**
HDPE	HDPE (Deposit)	0.1	0.2	82.2%	0.02%	0.01%
	Food	2.2	3.8	58.4%	0.51%	0.18%
	Other	5.1	9.1	56.5%	1.21%	0.42%
	Subtotal	**7.5**	**13.1**	**57.4%**	**1.75%**	**0.60%**
PVC	Food	0.3	0.3	85.4%	0.04%	0.02%
	Non-Food	0.7	1.4	47.3%	0.19%	0.06%
	Subtotal	**0.9**	1.7	**54.7%**	**0.23%**	**0.08%**
Tubs	Dairy	1.0	2.7	35.6%	0.36%	0.12%
	Other Food	0.3	0.7	39.6%	0.09%	0.03%
	Non-Food	0.0	0.3	16.9%	0.04%	0.01%
	Pharmaceutical	0.1	0.3	54.2%	0.03%	0.01%
	Subtotal	**1.4**	**3.9**	**36.1%**	**0.53%**	**0.18%**

Blue Box 2000 Recyclable Materials **Continued**

Material	Type	captured lb/hhld/yr	available lb/hhld/yr	Percentage Captured	% of recyclables	% of all waste
Polycoat	Dairy	2.1	4.2	50.4%	0.56%	0.19%
	Other Food	0.9	5.2	18.2%	0.69%	0.24%
	Non-Food	0.3	1.0	24.6%	0.14%	0.05%
	Subtotal	**3.3**	**10.4**	**31.8%**	**1.39%**	**0.48%**
BoxBoard	Food	15.8	34.4	45.8%	4.61%	1.58%
	Other	13.5	41.0	32.9%	5.50%	1.89%
	Subtotal	**29.3**	**75.4**	**38.8%**	**10.10%**	**3.46%**
OCC	Pizza Boxes	2.8	4.0	71.0%	0.53%	0.18%
	Pop Flats	2.8	3.8	73.1%	0.51%	0.17%
	Other	26.4	42.7	61.8%	5.73%	1.96%
	Subtotal	**32.0**	**50.5**	**63.4%**	**6.77%**	**2.32%**
PS Foam	Bakery	0.0	0.1	21.5%	0.01%	0.00%
	Food	0.6	4.0	13.8%	0.54%	0.19%
	Other	0.4	1.0	37.1%	0.13%	0.05%
	Subtotal	**0.9**	**5.1**	**18.4%**	**0.68%**	**0.23%**
PS Rigid	Bakery	0.2	0.7	27.1%	0.09%	0.03%
	Food	0.4	1.9	18.9%	0.26%	0.09%
	Other	0.1	0.9	9.2%	0.12%	0.04%
	Subtotal	**0.6**	**3.5**	**18.1%**	**0.46%**	**0.16%**
Film	LDPE Shopping Bags	5.4	18.1	29.9%	2.42%	0.83%
	HDPE Shopping Bags	0.7	2.9	22.7%	0.39%	0.13%
	Food Wrap	1.8	10.9	16.5%	1.46%	0.50%
	Paper Towel Wrap	0.2	1.2	15.2%	0.16%	0.05%
	Other	1.1	13.1	8.4%	1.75%	0.60%
	Subtotal	**9.1**	**46.1**	**19.8%**	**6.17%**	**2.12%**
HHLD Paper		**15.8**	**43.4**	**36.4%**	**5.82%**	**2.00%**
Alum. Foil	Trays	0.2	1.2	12.8%	0.16%	0.06%
	Wrap	0.1	2.5	3.1%	0.33%	0.11%
	Subtotal	**0.2**	**3.7**	**6.3%**	**0.49%**	**0.17%**
Magazines		**11.5**	**19.6**	**58.9%**	**2.62%**	**0.90%**
Phone Books		**3.8**	**5.0**	**76.0%**	**0.68%**	**0.23%**
Textiles		**3.7**	**34.0**	**10.9%**	**4.56%**	**1.56%**
Totals		**462.5**	**746.4**	**62.0%**	**100%**	**34%**

	lbs.	lbs/hhld/yr	%
Total Recyclables	3,804	746	34%
Total Organics	6,505	1,128	52%
Total Non-Recyclable Waste	1,746	303	14%
Total Waste Stream	12,055	2,177	100%

A survey of the residents of the 50 households was undertaken after the waste comp study. Some of the findings were:

- 31% of the households surveyed were composting: of those composting, 85% were composting all or most of their kitchen waste, and 85% were composting all or most of their yard waste.
- An average of 2.8 people per household, with 6% in diapers, and 88.5% recycling in the workplace.

Blue Box 2000 Waste Comp — Other Waste

Material		Total lbs collected	lbs/ hhld/yr	% of waste	% of category
Glass	Household	14.6	2.5	0.1%	0.8%
	Window	27.1	4.7	0.2%	1.6%
NR Rigid Plastic	Containers	26.4	4.6	0.2%	1.5%
	Tray and Bubble Packing	10.0	1.7	0.1%	0.6%
	Sm Dura Plastic Goods	17.6	3.1	0.1%	1.0%
	Medicine and Pharmaceutical	3.6	0.6	0.0%	0.2%
NR Film	Snack Food Bags	15.2	2.6	0.1%	0.9%
	Other Unrecycable Films	23.3	4.0	0.2%	1.3%
NR Paper	Waxed	12.5	2.2	0.1%	0.7%
	Tissues	102.8	17.8	0.8%	5.9%
	Other	10.5	1.8	0.1%	0.6%
NR Metal	Ferrous	93.0	16.1	0.7%	5.3%
	Non Ferrous	21.9	3.8	0.2%	1.3%
Ceramics and Pottery		10.3	1.8	0.1%	0.6%
Multi-Layered Pkg	Tetra-Pak	8.7	1.5	0.1%	0.5%
	Food	20.9	3.6	0.2%	1.2%
	Non-Food	12.6	2.2	0.1%	0.7%
Sanitary	Diapers	288.9	50.1	2.3%	16.5%
	Other	140.6	24.4	1.1%	8.1%
Pharm & Cosm + Containers		5.8	1.0	0.0%	0.3%
Unrecyclable Textiles		22.4	3.9	0.2%	1.3%
Footwear, Luggage, and Handbags		93.6	16.2	0.7%	5.4%
Appliances	Repairable	28.5	4.9	0.2%	1.6%
	Non-Repairable	23.7	4.1	0.2%	1.4%
HHW	HHLD Batteries	13.5	2.3	0.1%	0.8%
	Aerosol Cans (Alum)	1.7	0.3	0.0%	0.1%
	Aerosol Cans (Ferrous)	14.5	2.5	0.1%	0.8%
	Oil Bottles	6.7	1.2	0.1%	0.4%
	Other	17.7	3.1	0.1%	1.0%
Animal Waste		419.2	72.7	3.3%	24.0%
Treasures	Vacuum Lint	96.4	16.7	0.8%	5.5%
	Coat Hangers	2.3	0.4	0.0%	0.1%
	Paint Brushes	5.0	0.9	0.0%	0.3%
	Rope and Twine	3.9	0.7	0.0%	0.2%
	Other	80.0	13.9	0.6%	4.6%
Floor Sweepings		50.6	8.8	0.4%	2.9%

Yard Waste	Garden Waste & Leaves	3817.6	661.7	30.4%	58.7%
	Brush and Bushes	453.1	78.5	3.6%	7.0%
Kitchen Organics		2234.2	387.3	17.8%	34.3%

Other Material Gathered	3064.0	531.1	24.40%

Other Material is primarily major renovation/demolition & bulk items. This tonnage is not included in totals.

Recyclables	Spring Sort In Trenton Available lbs/hhld/yr	Captured lbs/hhld/yr	%	Fall Sort In Belleville Available lbs/hhld/yr	Captured lbs/hhld/yr	%
News Paper	216.7	178.6	82%	352.0	285.1	81%
Glass	120.2	89.6	75%	128.1	99.9	78%
Ferrous	77.8	60.7	78%	59.9	43.7	73%
Aluminum	7.1	5.8	82%	2.8	1.8	64%
PET	9.2	7.7	83%	8.4	5.6	66%
HDPE	13.1	7.5	57%	12.3	7.1	57%
PVC	1.7	1.0	55%	1.8	1.0	55%
Tubs	3.9	1.4	36%	5.4	2.4	44%
Polycoat	10.4	3.3	32%	7.0	3.1	44%
Boxboard	75.4	29.3	39%	72.4	33.2	46%
OCC	50.5	32.0	63%	53.4	35.8	67%
PS (Foam)	5.1	0.9	18%	3.9	1.2	31%
PS (Rigid)	3.5	0.6	18%	1.7	0.4	22%
Film	46.1	9.1	20%	52.6	17.8	34%
Household Papers	43.4	15.8	36%	61.3	16.2	26%
Aluminum Foil	3.7	0.2	6%	2.0	0.1	5%
Magazines & Cat.	19.6	11.5	59%	47.0	29.6	63%
Phone Books	5.1	3.8	76%	2.1	1.9	89%
Textiles	34.0	3.7	11%	19.8	6.7	34%
Total Recyclables	746.5	462.5	62%	893.9	592.5	66%

Other Material	Spring lbs/hhld/yr	Fall lbs/hhld/yr
Glass	7.2	11.1
Rigid Plastic	11.0	15.5
Other Films	6.7	11.4
Other Paper	21.8	60.0
Other Metal	19.9	25.0
Metal Foils (Paper Backed)	-	0.5
Ceramic & Pottery	1.8	2.5
Multi-Layer	7.3	5.1
Diapers & Sanitary	74.5	71.2
Unrecyc Textiles	3.9	7.3
Footwear, Luggage Etc	16.2	7.6
HHLD Appliances	9.1	1.0
HHLD Hazardous Waste	9.4	7.0
Animal Waste & Litter	72.7	92.0
Treasures	32.5	65.2
Yard Waste (Compost)	661.7	1259.8
Yard Waste (Non-Compost)	78.5	7.7
Kitchen Organics	387.3	-
Kitchen Organics (compost)	-	291.8
Kitchen Organics (non-Comp)	-	51.1
Bulky Items & Renovation	601.2	195.4
Residual	8.8	13.8
Total	2031.4	2202.0

Spring and Fall Waste Composition

A second waste composition study was conducted in the fall of 1992 in Belleville. The purpose of this study was to compare the results with the spring study in Trenton presented in the previous pages. Unfortunately, a number of circumstances invalidated the fall study. These included garbage being collected inadvertently by regular garbage crews within the study area during one week, and the winter's worst snowstorm which caused both recycling and garbage collection being cancelled for another week. The summary results of the fall study (for a 5 week analysis over a 6 week period) are presented here and compared with the spring results. While the results are not considered valid for a detailed examination, they do provide an interesting comparison. Note that the fall study include leaf collection. Organics were separated into backyard compostables and non-compostables (generally meat and dairy and brush).

Promotion Activities

When Blue Box 2000 was launched in November 1991 it was treated as a launch of a new program. The focus of the launch was on **how** the householder was to set out material at curbside. It was determined prior to the launch of the program that Blue Box 2000 would work only if material was prepared properly and set out in the 6 groupings. If material was mixed together in the Blue Box it would be extremely time-consuming for the driver to separate into the various compartments and even more difficult, if not impossible, to separate at the plant.

The launch of Blue Box 2000 consisted of the following:

- A series of newspaper ads over a 3 week period up to and including the launch. The focus of the ads was the illustration of the proper set-out. Total cost was 15¢ per household.
- A press release and article on the new program.
- A launch ceremony held at the plant and a press kit was prepared and distributed.
- A 30 minute cable-TV interview/show on how to prepare the new materials that was repeated several times around the launch date.
- An information package delivered to every household. The package included a new poster (8 1/2" x 14", 2-sided and 2-colour), a 5" x 6" sticky label with an illustration of the new set out to place over the old instruction label in the Blue Box, and a general introductory sheet. The cost was 52.5¢ per household for printing and distribution. A small survey 7 months later found that only 17% of the stickered boxes had the new sticker installed, while 83% still had the old sticker. Another finding of that survey was that only 36% of the boxes had the household name or address written in the white bar provided for that purpose.

A "Problem Card" for distribution to problem households showing the proper set-out was prepared, but was never printed since it was not necessary (see section on Participation Study).

Other ongoing promotion includes the following:

- **Telephone hotline** that answers questions and trouble-shoots.
- **News releases** report on the monthly production and markets. The reports include other information such as number of trees saved and energy savings.
- **Cable TV** interview/shows are done on a quarterly basis.
- **Truck drivers** provide an excellent feedback system to the householders. This is both indirect — by leaving unacceptable materials in the box with one of a series of "Problem Cards" — and direct in conversation with many of the residents.
- **School programs** were conducted throughout the area to help the new generation become familiar with the 3Rs.

In the summer of 1992, a new round of promotional activities was launched. This included newsletters, mall displays, problem and issue cards, public talks, school tours, and some household visits/ surveys. The purpose of this blitz was to increase capture rate — especially of the new materials.

- **A Newspaper campaign** was launched focusing on the new materials. The campaign was centred on the "6 Most Wanted", which referred to the new materials that had a low capture rate: foam plastic, aluminum trays & foil, textiles, boxboard & household paper, magazines, and plastic bags. A series of ads that tied in with other promotion such as newsletters and displays were created for the individual materials.

- **Newsletters** were prepared and distributed to all households. These were 4-page, tabloid newsprint newsletters. They included information on all aspects of Blue Box 2000, including the backyard composting program, IC&I activities, waste reduction, and the new materials. Humour was used extensively, with regular features of "Your Recycling Horoscope", "Dear Gabby", and a comic strip on the continuing adventures of "Captain Compost & the Blue Box 2000 Brigade". Newsletters cost about 10¢ per household to print and distribute.

- **Display panels** were prepared. These were 2 sets of 3 double panels. Large boards were prepared on different topics, including all aspects of Blue Box 2000. The boards could be easily mixed and matched on the panels to create custom displays. The panels, which are highly portable, have been used at mall displays, workshops and seminars, school presentations, and at recycling depots.

- **Student help** was obtained through the EYC Program. Two students spent the better part of the summer promoting Blue Box 2000 at schools, summer camps, service clubs, cottage associations, malls, and rural recycling depots.

- **A door-to-door survey/education campaign** was conducted in the Trenton neighbourhood that had previously been used for the participation study. The 200 households that were identified as having the greatest problem with recycling were visited. The problems ranged from non-participation in the program, to poorly separated set-outs or contamination, to not including many of the new materials. Although the response to the visits was very positive (see Survey section), the measured impact when compared to Belleville households (see Participation section) was not found.

Promotion & Education: Lessons Learned

◊ Three types of promotion should be initiated: a concentrated launch campaign; on-going promotion; and the occasional focused blitz campaign for materials with low recovery rates.
◊ Promotion and education is multi-media, using all available avenues, especially the low-cost/no-cost ones such as cable TV, articles, and press releases.
◊ A good quality poster/detailed information card is the most effective single vehicle (see Survey) and should use pictures more than words..

Surveys

A number of surveys have been conducted through the first year of Blue Box 2000. This section presents some of the highlights of these surveys. The first 3 were door-to-door interviews co-ordinated by the Quinte Environmental Resources Alliance (QERA) using summer students. The fourth survey was conducted by telephone and coordinated by Informa Inc. of Toronto.

Waste Composition Study Household Survey — July, 1992

The 50 households of the spring Waste Composition Study were visited and surveyed to provide the context for some of the data generated from that study. There were 42 responses.

- Only 1 household did not have a Blue Box.
- 91% said they were happy with the level of effort required by Blue Box 2000.
- 31% of the households were composting, almost half with homemade units (this was prior to the YIMBY program). Of these, 85% said they were composting all or most of their kitchen and yardwaste.
- 88.5% of those employed outside of the home were recycling at work.
- A total of 117 residents live in the 42 households, including 90 adults and 7 children under 2 in diapers.

Participation Study Household Survey — July/August, 1992

Of the 600 households in Trenton that were part of the Participation Study, 291 were identified as "problem" households. The problems ranged from non or intermittent participation, to mixed set-outs or contamination. 182 households were visited over the course of the summer.

- 15% had moved within the last year. 6% of households did not have a Blue Box.
- 93% of the households were happy with the level of effort required for Blue Box 2000.
- 17% made suggestions concerning the program: half wanted larger boxes, while about 1/3 wanted more materials included or reinforcing legislation.
- 1.5% of those interviewed had suggestions to improve the pick-up of materials by the drivers.

Business Recycling Survey — August, 1992

A door-to-door survey of 109 downtown Belleville businesses was conducted in August.

- 49% possessed a Blue Box. Boxes had been delivered to street-front businesses, but not to businesses on the second and third floors.
- The most common explanation for not having a box was that they were not given one. When offered a box, only 12% of businesses surveyed declined to participate in the recycling program.
- Of those businesses recycling, 80% put out the box weekly.
- 20% put out the box 1/2 full, over 70% when it was full. Only 4% have to place extra containers with the box.
- There was a high recycling rate (over 50% participation) for newspaper, cans, glass, fine paper, boxboard, and a low rate (under 30%) for less common materials, such as foil, foam plastic, magazines and textiles.
- Almost 60% had not instituted other recycling efforts, while only 14% had a waste reduction plan.
- 93% of the businesses use the municipal curbside garbage service, 69% twice a week.
- Half the respondents do not recycle their corrugated cardboard (OCC is not accepted in business Blue Boxes). 1/4 don't generate OCC, 1/4 have found another method to recycle/reuse OCC.

Awareness & Participation in Waste Reduction Programs

November, 1992

A random telephone survey of 208 adults who have access to recycling services was completed. The sample comprised 103 urban residents living in detached and semi-detached homes, 52 people living in apartments/multiple dwelling units, and 53 rural dwellers. The following are highlights.

Blue Box Recycling

- 75% of participating recyclers put out their box every week, 14% every other week, and 11% less often.
- Plastic bags had the highest recognition factor of the new materials (76%). At least 40% recognized aluminum trays and foil, and textiles. Less than 10% acknowledged household paper, foam plastic, and magazines.
- 88% have experienced no problems with their Blue Box. The most common problem was "objects not accepted/returned".
- 9% wanted more information on the program, while 7% wanted more or larger boxes.
- 27% recognize that Blue Box 2000 is different from other recycling programs.

Backyard Composting

- Overall, 74% of the households own a composter: 81% rural households, 68% urban households, and 25% apartments.
- 49% obtained their composter through the home drop-off, 27% picked it up at a depot.
- 21% have been composting for more than 2 years, 28% 1 to 2 years, and 51% within the last year.
- 1/2 of those urban and rural households not composting say it is very or somewhat likely that they will start composting in the near future.
- 78% say that they compost all or most of their kitchen organics. 91% say they will compost throughout the winter.
- 71% say that they compost all or most of their yardwaste.
- 94% claim that they have had no problems with the composter.
- 72% are very satisfied and 26% somewhat satisfied (a 98% satisfaction rating).

Packaging

- 55% have noticed a change for the better in supermarket packaging, primarily more recycled packages and less packaging.
- 77% claim recognition of the "recycled material" symbol, 71% "recyclable material", 50% the "Environmental Choice" symbol, and only 22% for the codes for different plastics.
- 66% claim that the recycled material logo shapes their purchasing decisions.
- 66% have taken further waste reduction measures.
- 61% have altered their shopping habits to reduce waste.

Communication/Public Education

- Recycling: 61% recalled the brochure/poster, 25% newspaper ads, and 22% newspaper articles.
- Composting: 45% recalled the composting brochure, 14% the distributers, 10% newspapers.

Other Conservation Measures: Energy & Water

- 60% are very and 34% somewhat interested in energy conservation.
- 51% are very and 32% are somewhat interested in water conservation.
- People have taken steps to reduce: 87% are reducing energy consumption, and 66% water use.

Program Structure

The Centre & South Hastings Waste Management Board was set up by the Centre & South Hastings Waste Management Master Plan Steering Committee. The Steering Committee was established in 1985. The Board was established in September, 1989 to be the implementation arm for 3R activities.

The Board is responsible for the design and operation of the recycling program. It oversees the contractor for the collection, processing and marketing of materials. The Board is responsible for education and promotion and for making recommendations to the Steering Committee and to the 15 councils. The Board has been active in Blue Box recycling, IC&I recycling and reduction, Household Hazardous Waste, Backyard Composting, and Waste Reduction.

There are 15 municipalities that signed the Board Agreement. The Board itself is composed of 7 members — all municipal officials on the Committee; one each from Belleville, Trenton, Sidney, Thurlow, with the 3 others appointed from the remaining parties to the Agreement. The annual budget of the Board is submitted to the 15 councils. If it receives approval from 75% of the parties, it is binding on them all. Once the budget is approved, the Board can proceed with the waste diversion activities.

New Entries
A municipality can join the recycling program by paying a one-time entrance fee (held as reserve by the original 15) that is equal to what their capital cost would be if they had joined the Board at the start-up, and by agreeing to pay for their percentage share of operating costs and new capital costs based on number of households as a percentage of all households involved in the program. New municipalities do not sit on the Board or have an equity position with equipment.

Contractor

The contract with HGC Management is for the collection, processing, marketing, hotline, and equipment maintenance (all equipment is the property of the Board). The Collection contract is for a fixed price for a certain number of Blue Boxes, with an extra charge for additional boxes. Processing is for a fixed sum, with additional per-ton charges for tonnage over a fixed amount. The contract has an annual cost-of-living escalation.

This type of contract represents a win-win relationship between the contractor and the municipalities. It is in both parties' interest to be aggressive in the Blue Box program. As the households increase (or household equivalents such as apartments, schools, businesses) the contractor gets paid more, but at a marginally less rate than the basic charge. As tonnage of material increases, the contractor gets more money to cover added costs. But the incremental cost is less than the basic costs. This means that the costs per ton decreases as more tonnage is processed.

Markets

Blue Box 2000 has set out to explore different marketing issues by providing industry with new materials. Of the material that enters the recycling facility, less than 2% is residual or contamination that has to be landfilled. 98% of the material is further separated into 20 material streams and shipped to market as soon as a shipping load is accumulated. With its emphasis on source separation, Blue Box 2000 can ensure clean, marketable materials.

Marketing of processed recyclables is primarily the responsibility of HGC Management. Municipal involvement with industry in the creation of viable markets is essential. Industry organizations have worked with the program to develop new markets. OMMRI: Corporations in Support of Recycling has markets committees composed of brand owners, packaging and material suppliers. Other organizations include: PPEC (Paper and Paperboard Packaging Environmental Council), EPIC (Environment and Plastics Institute of Canada), PFMAC (Plastic Film Manufacturers Association of Canada).

With the exception of tubs, markets are stable, and in the case of fibres, improved. Identifying viable markets for tubs has become especially critical. During the last quarter of the demonstration project, because of improved capture rates for the newly added materials such as film plastics, further market development is required.

Fibres

ONP and OMG
During the first half of the Blue Box 2000 demonstration program, magazines (OMG) were pulled from the newspaper (ONP) stream and baled separately. Deinking mills are now allowing ONP and OMG to be mixed together. The mixing of ONP and OMG has indirectly resulted in an increase in revenue for these materials - the added step of pulling OMG from the ONP has been removed which reduces processing costs, and the pricing of the ONP and OMG blend has been maintained at the previous pricing levels for 100% ONP. Bales of mixed ONP and OMG are currently being sold to Atlantic Packaging for around $30 per ton FOB Trenton.

Telephone books
Telephone books are stored on the truck with ONP and OMG, and are blended in with the ONP/OMG mix. Although this does not pose a problem for Quinte's end market, it may not be an option for other recycling programs across the province, due to the size of the telephone books relative to the amount of newspaper and OMG that is collected. For the couple of weeks every year when phone books are heavy following the distribution of the new edition, the ONP, with the phone books, has been sent to a containerboard mill rather than a deinking mill.

Boxboard and household paper
With the addition of household paper, this stream has become one of the largest volume products recycled through Blue Box 2000. Based on waste composition information, the capture rate of household paper is only 36%, which indicates that there is a lot of room for further growth.

Interest from the mills in using post-consumer boxboard has improved dramatically, due to precedent setting changes in boxboard container specifications put out by brand owners such as Lever Brothers and Proctor & Gamble. This specification required that the boxboard cartons for detergent must

contain a minimum of 25% post-consumer feedstock. This brought about a demand for Blue Box 2000's material. Currently Blue Box 2000 receives $18.18/ton, FOB Trenton.

The potential market for post-consumer boxboard is increasing as it is becoming used in some food packaging. The addition of household paper to the boxboard stream improves the quality of the feedstock by increasing fibre quality and diluting contamination. However, the addition of mixed paper reduces the percentage of post-consumer boxboard that can be bled into the manufacture of new material. This makes it more difficult for the producers of boxboard to meet recycling targets.

Polycoat
Milk and other dairy and juice gable-end cartons are manually pulled from the boxboard/mixed paper stream, and are baled and stored until truck load quantities are accumulated. Currently, baled polycoat is shipped to Donco, in Ohio, although other markets for this material are opening up. Revenues for this material are $100/ton U.S., and on occasion, freight arrangements are provided.

OCC
Most of the old corrugated cardboard (OCC) from residential collections is stored in the 2.25 cu. ft. OCC box which hangs off the back of the truck. When the OCC box fills up before the collection route is complete, a small amount of OCC is stored on the truck in the ONP/OMG compartment. This OCC is pulled out of the ONP/OMG mix during the sort for contaminants, and is combined with OCC that has been dropped off by IC&I generators. Baled OCC is sold to Sonoco for $30/ton FOB Trenton, although this price fluctuates.

Other Materials

Textiles
Bags of textiles that have been manually pulled from the boxboard/household paper stream, are stored in gaylords until they are picked up by a local non-profit organization. There, the material is separated into four categories: clothes for retail sale, representing 0.9% of the textile stream with a value of $1/lb.; industrial wipes, representing 1.7% with a value of $0.60 - $1/lb; third-world usable clothing representing 83.5% with a value of $150 - $180/ton or $0.08/lb. The remainder of the material (13.9%) will be sold as shredded material (mattress stuffing etc.).

Glass bottles and jars
Glass bottles and jars are sorted by colour and for contaminants at the curb. Although the amount of handling that takes place at the point of collection seems to be excessive, it actually represents the only time glass is handled. Once the truck is back at the plant, glass is offloaded into one of two outdoor bunkers, where it is stockpiled until shipping quantities have been accumulated. It is then loaded onto dump-trailers for shipment to Consumers Glass (coloured $38/ton, flint $43/ton).

Aluminum cans and foil
From the mixed can stream, ferrous containers are magnetically removed leaving aluminum cans, plates and foil. Currently all aluminum products are being stored, baled and marketed to Alcan, although alternative markets are being explored. Revenues for this material fluctuate, but at present are around $750 per ton FOB Trenton.

Steel cans
Steel cans are pulled from the aluminum products with a magnetic head, and are stored loose until sufficient quantities are accumulated for baling.

During the planning stages of Blue Box 2000, it was decided that a can densifier would be installed to take advantage of the higher revenue offered for biscuits and to reduce freight charges. With closer analyses however, this system was rejected for a number of reasons: the added labour costs for operating a can densifier would have exceeded any added revenue the program would receive; a reliable, affordable densifier was not found; and the baler extension produced bales dense enough to ship to market, thus saving on freight.

Plastics

Early on in the program, the Blue Box 2000 Operating Committee assumed the position that whenever possible, post-consumer plastics that have been sorted according to resin type, or in the case of tubs, according to end use, would go to a higher-value end-market than that available for mixed plastics. By this we meant that plastic lumber would not be an acceptable end-market for clean, sorted plastics. For the most part we have been able to avoid this using this lower-value alternative.

Rigid Plastic Containers

Specific resin types (PET, HDPE and PVC) are manually pulled from the mixed plastics stream and are stored in large hoppers until sufficient quantities have been accumulated for baling. Sorters are trained to rely in part on name brands to help distinguish resin types, although in too many cases brand names regularly switch the type of plastic resin used. This is a particularly important aspect of the sorting process, because of the range of "unrecyclable" recyclable plastics — microwaveable PET containers, HDPE motor oil bottles, multi-layered and mixed resin types — seems to be increasing.

PET

There has been a noticable increase in non-softdrink specialty PET containers. Through Twinpak, PET is sold to Wellman for $210/ton.

HDPE

Motor oil bottles were originally accepted as part of the HDPE mix, but due to a change in specifications, it is now required that they be kept separate. While a number of companies are interested in accepting used motor oil bottles, the amount of leakage that occurs while they are being stored in bales, makes them impossible to store. Loads of baled HDPE are sold to Resource Plastics for between $70 and $80/tonne, delivered.

PVC

Loads of baled PVC are sold to Oxychem (US) for around $66 ton. On occasion, special freight arrangements have been made.

Polystyrene (rigid and foam)

After PET, HDPE, PVC, tubs and contaminants have been removed from the plastic container stream, the only remaining product on the sort conveyor is rigid and foam polystyrene.

Bales of rigid and foam polystyrene continue to go to CPRA's plant in Brampton. Although initially no revenue was obtained for this material, BB 2000 now receives 3 cents a pound, delivered.

Film plastic bags

Plastic bags are manufactured mainly from LDPE, although there are a few made from HDPE (ie. Sears). Bags of plastic bags are pulled from the boxboard/mixed paper sort line, felt for contaminants

(ie. a can or bottle), and stored in a large bin until baling quantities have been accumulated.

Loads of baled film plastic have been shipped to a variety of potential end users for testing purposes, and on occasion, some plastic wood manufacturers. The plastic film manufacturers committee (PFMAC) is working with OMMRI in rolling out and developing markets for film plastic. This committee is currently working on a set of standard plastic film specifications, and it is anticipated that a limited market for post consumer plastic film will be available by mid 1993.

Plastic tubs

Tubs (wide-mouth containers and lids) are manufactured mainly from LDPE, HDPE, and PP with a number of other resin types. Although technically, all tubs are recyclable if they are separated according to resin type, sorting trials at the plant indicate that this is not a practical solution because it is difficult and time-consuming to identify the resin type. Tubs continue to provide Blue Box 2000's greatest marketing challenge — all loads of this material not going to tests and trials have been shipped to a plastic wood manufacturer.

In October of 1992, an Ad Hoc Committee through EPIC was formed to find markets for wide mouth containers collected in residential blue box programs. The initial impetus for the formation of the committee was the stockpile of wide mouth containers building up at the facility. Other programs collecting tubs with mixed plastics were storing or landfilling the tubs, but the Quinte program insisted that industry come up with a solution, in much the same way that a market had been developed for boxboard a year earlier.

The committee considered ways of separating the material into its different resin types (both manual and electrostatic methods), but no workable solution has been found to date, although further testing is being done. The committee is also examining potential uses for using tubs in its co-mingled state, through either compression molding (e.g. pallets) or blending tubs with virgin resin and using injection molding (e.g. crates and boxes).

Samples of Quinte tubs have been used for various sorting and processing tests being organized by the Committee. It is too early to tell to what extent the value of the material as a resin will compensate for any cleaning, grinding and pelletizing charges, and therefore what revenue or charge could be anticipated in the near future. Work to help develop a useful, practical end-market for this material is expected to continue in the next year of operation.

Markets: Lessons Learned

- ◊ The vast majority of materials processed through Blue Box 2000 have no market problems.
- ◊ Potential markets for new kinds of recyclables do not have standard specifications, and need significant amounts of feedstock for testing.
- ◊ Market development opportunities improve with the involvement of brand owners (ie. the manufacturers of the product that fills the container/package that you are trying to recycle).
- ◊ Manufacturers and potential end users of new recyclables must work with municipal recycling programs to develop viable markets.

Appendix

Beside & Inside
2-sided poster/flyer distributed at launch of Blue Box 2000 — 2 pages

Launch ad
Newspaper launch ad — 1 page

Bag and Sticker
"Save-a-Bag" sticker for businesses and Blue Box sticker for boxes — 1 page

Problem card
2-sided flatten OCC and boxboard/mixed paper set-out card — 1 page

Wanted
spot ads for "new materials" newspaper campaign — 1 page

Blue Box Herald
4-page tabloid newsletter distributed to all households — 4 pages

Yimby flyer
2-sided door-to-door flyer promoting composting program — 2 pages

Promotion

Blue Box Beside & Inside Blue Box

Textiles

Put clean clothing and textiles in a garbage-type bag and tie securely with a piece of cloth or a sock. Include most clothing, sheets, drapes, etc. Place the bag beside the Blue Box only when you have a full bag. *Do Not Include* dirty or soiled material. Do not include vinyls, pillows, belts, raincoats, luggage, ski gloves, handbags, or shoes. Avoid putting the bag out on rainy days.

Clean Plastic Bags

Place clean plastic bags and wrap in a plastic bag and tie it shut. Add only clean material, free of food residue, or any paper or stickers. Include plastic grocery sacks, rinsed milk pouches and outer bags, bread bags, dry cleaning bags, diaper outer bags (no diapers), frozen vegetable bags, produce bags, blue newspaper bags, outer wrapping from toilet tissue/paper towels. *Do Not Include* dirty or soiled material or any paper. Do not include plastic food (stretch) wrap, wrap from bacon or meats, cereal and cracker liners, plastic overwrap from boxes, snack food bags (chips, candy), vinyls, rubber gloves or balloons.

Newspapers & Magazines

Place newspapers, inserts, phone books, magazines & catalogues in a plastic or paper bag next to your Blue Box. If possible, keep magazines & catalogues until you have a full bag. *Do Not Include* books or soiled paper. Keep mixed paper, corrugated cardboard and boxboard separate from newspapers.

Corrugated Cardboard

This is the type used for shipping stereos, furniture, large appliances (it has the wavy corrugations in the middle). The boxes must be flattened and bundled in 30" by 30" sections up to 8" thick and left beside your Blue Box. *Do Not Include* waxed or coated boxes, pizza boxes (unless absolutely clean), or any non-corrugated cardboard.

Boxboard & Household Paper

Boxboard includes cereal, shoe box, and detergent type of boxes and *rinsed* milk cartons. Mixed household paper includes junk mail, paper bags, egg cartons, cardboard tubes, paper packaging such as cookie wrap, sugar and flour bags and other clean paper packaging. Remove any food and liner bags, *flatten* the boxes and place all material in a box beside your Blue Box. *Do Not Include* drinking boxes or contaminated paper such as tissues. No paper with heavy foil or plastic lamination or waxed paper. Shake out all food residue. Remove rigid plastic trays (as found in some cookie or cracker bags) and recycle with plastic containers.

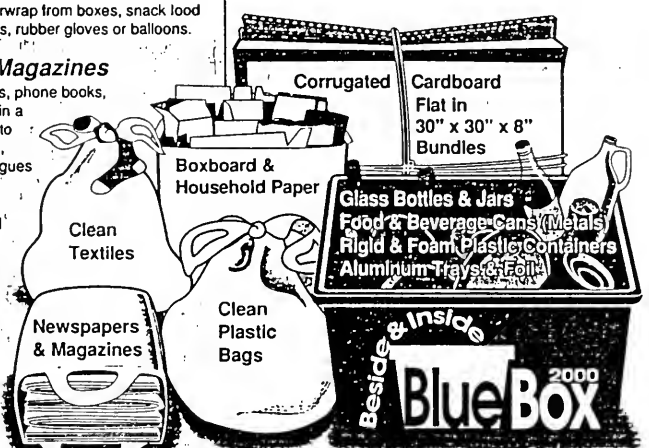
Put these items *Beside* the Blue Box

Rigid & Foam Plastic Containers

Discard tops and ***rinse*** containers for soft drinks, detergents, water, juice, bleach, shampoo, yogurt, ice cream, and other food stuffs. Include, *but do not rinse*, **empty** oil and anti-freeze plastic containers and leave their tops on. Include both foam and clear- plastic cups, trays, and *Do Not Include* drink boxes, medicine containers, plastic toys or other durable plastic products.

Aluminum Trays & Foil

Include rigid foil containers such as pie plates, fast-food trays, etc. Include clean aluminum foil. Foil and plates should be flattened and folded together into one unit and placed loose in the Blue Box. *Do Not Include* aluminum foil with food scraps or grease. No foil with paper or plastic lamination, (no take-out food lids, no butter/candy/cigarette wrapping, no yogurt lids, no metalized plastic chip bags, no blister foil). Do not stuff aluminum into other cans or containers.



Glass Bottles & Jars – Rinsed

Remove caps and lids, you don't have to remove labels. Rinse the containers. You can recycle the metal caps and lids with cans. *Do Not Include* **any other type of glass**; ceramics, dishes, cups, window glass, light bulbs, mirrors, pyrex, or drinking glasses.

Metal Food & Beverage Cans

Rinse cans out. You don't have to remove labels or flatten the cans. Place metal lids from cans and glass jars in the bottom of a can and pinch the top to trap the lids inside. *Do Not Include* aerosol cans, paint cans, frozen juice cans (unless all metal), metal pots or any other metal products.

Environment Environnement Ontario

Quinte Regional Recycling

Put these items *Inside* the Blue Box

8½" x 14" 2-side, 2-colour poster/brochure distributed door-to-door during Blue Box 2000 launch.

Welcome to your leading role in Blue Box 2000

With Blue Box 2000, you the householder, are front stage and centre. You have a more important recycling role than ever before. Here are some tips and reminders to help you on your way.

Blue Box 2000 *Advanced Recycling Tips*

KEEP the materials in separate groups and set them out according to instructions. *How* you recycle is just as important as *how much* you recycle. Some materials go Inside the Blue Box, others go in separate containers Beside the Blue Box. Don't mix materials or put things in the Blue Box that don't belong there.

COLLECT a reasonable quantity of material before you set out an item for recycling. You don't have to put out every type of item each time you set out your Blue Box. In fact, it may take several weeks for you to collect a reasonable quantity of some things such as plastic bags, textiles or household paper.

REMEMBER the 3R's; Reduce, Reuse and Recycle. The more you recycle, the more conscious you will become of where and how your family generates waste. As this happens, keep your eye open for opportunities to move up the 3R's ladder. Look for ways to Reuse materials instead of recycling and to Reduce waste entirely by avoiding certain habits and products.

WATCH for news of other ways you can help to reduce waste. Expanded recycling with the Blue Box is only one part of Blue Box 2000. Over the coming year new programs will be added to help in Waste Reduction, Backyard Composting and safe disposal of Household Hazardous Waste.

◊ ***PLASTIC BAGS***
Save plastic bags and wrapping until you have a bag full. Turn bags inside out to ensure there are no receipts or labels in them. When setting the bag out at the curb it's a good idea to weigh it down so it won't blow away. Tie the bag's handles in a knot; do not use metal twist ties.

◊ ***TEXTILES***
Collect unwanted clothing and textiles until you have accumulated a full bag. Tie a sock or piece of cloth on the bag to identify the contents. Items in good condition should be bagged separately and sent to a local charity for reuse.

◊ ***MAGAZINES and CATALOGUES***
When you've accumulated a large stack, slip them in a plastic bag and set out with the newspapers. Magazines and catalogues can be put in the bag with the newspapers. However, it helps if they are bagged separately.

◊ ***BOXBOARD AND HOUSEHOLD PAPER***
This includes virtually all paper that's not contaminated. Use a large boxboard container such as a detergent or cereal box to collect your boxboard and household paper. Flatten all boxes and rinse and flatten milk cartons before putting them in the box. Make sure there's no food residue in the paper sent for recycling. Shake out grocery, bread and cookie bags and remove the liner bags from cereal boxes.

Blue Box *Basics: A Few Reminders*

SET OUT your full Blue Box at the curb before 7:30 a.m. on the same day as your regular garbage pick-up.

KEEP ALL recyclables well away from your regular garbage, if possible on the other side of the drive. The Blue Box is the signal to the driver to stop. Please make sure it is visible from the road.

IDENTIFY your Blue Box by putting your address on the side. The Blue Box should remain with the house when you move.

RURAL PICK-UP will be on the same side of the road as your mail delivery.

FULL BOX: Please put out your Blue Box only when it is full.

LOST OR STOLEN BOX: To replace a lost or stolen Blue Box, call the Recycling Hotline (Collect) 392-2121.

HOLIDAYS: There will be no collection on Statuatory Holidays. If the holiday falls on your regular collection day, put out your Blue Box on the regular collection day the following week. Check your local newspaper for any changes.

DEPOTS: Tyendinaga, Hungerford, Madoc, Rawdon landfill sites and the larger apartment buildings have a recycling depot with separate bins for different materials. Please use the right bins.

CALL: The success of our Blue Box program depends on your careful participation. If you have any questions or doubts about anything, call the Recycling Hotline (Collect) **392-2121**.

Quinte Regional Recycling is taking a leading role in waste diversion. Your co-operation in making this an effective and efficient program is appreciated. We are striving to maximize recycling, however, some of the products we CAN'T recycle at this time include:

drinking boxes	diapers
shoes	scrap metal
pottery or ceramics	any glass that's not bottles or jars
waxed paper	food-contaminated items

packaging with different materials such as paper/metal/plastic

Ontario Environment Environnement

Quinte Regional Recycling

Nov. 91

2nd page

Remember when we told you Blue Box Plus was the most comprehensive waste diversion program in Ontario? Well, that was last year.

Our new program, Blue Box^{2000}, with all the new materials that can be accepted for recycling, is the most comprehensive waste diversion program in Canada. For now.

As of November 18th, you'll be able to put out for recycling these new materials:

- ◊ *Foam Plastics*
- ◊ *Aluminium Trays and Foil*
- ◊ *Plastic Bags*
- ◊ *Textiles*
- ◊ *Magazines*
- ◊ *Mixed Household Paper.*

How best to bind, box, or bag each item will be detailed in a set of instructions delivered to your household, called **"Beside and Inside"**.

The expanded residential recycling program is just one part of a larger recycling program called **Blue Box^{2000}**. Under this new program, Centre and South Hastings will attempt to reduce the household waste flow to landfill sites by fifty per cent in the next twelve months. That's eight years ahead of the target date set by the province. Other parts of the program will include backyard composting, waste reduction activities, and industrial and commercial initiatives.

The success of Blue Box^{2000} depends on you.

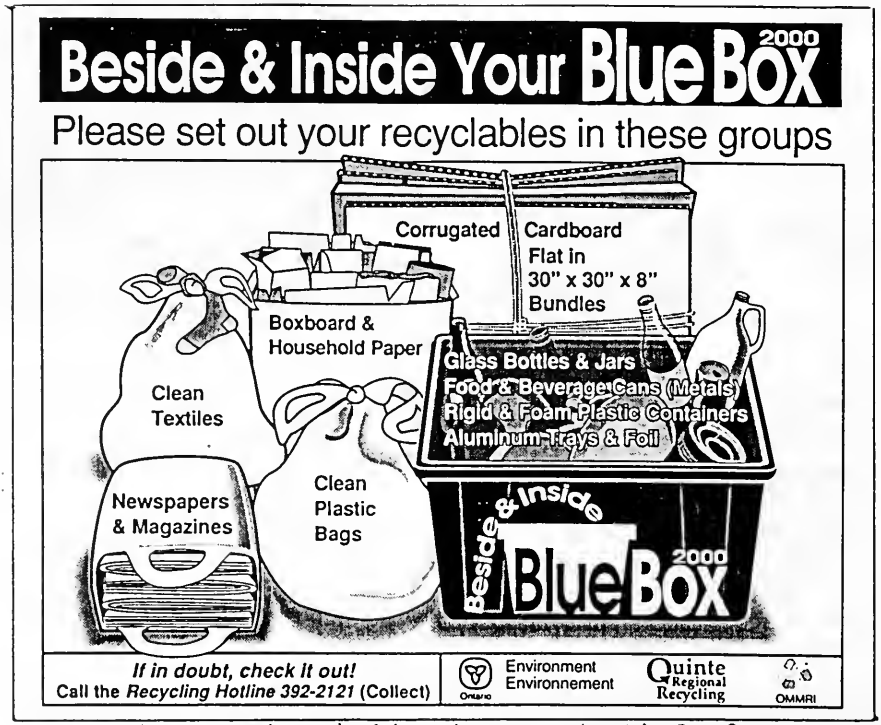
The more you pitch in — the less we pitch out.

Ontario Environment Environnement

Quinte Regional Recycling

Launch newspaper ad

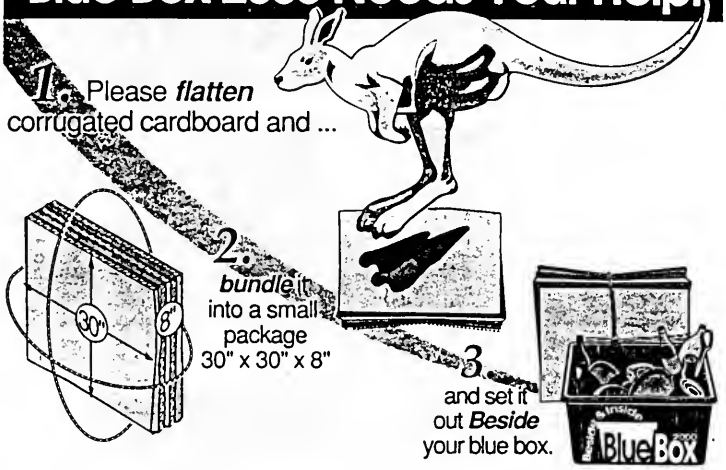
1-colour, sticky-backed for retail outlets, part of "Save-A-Bag".



1-colour, stickey-backed, part of launch – to be placed in Blue Box over old sticker.

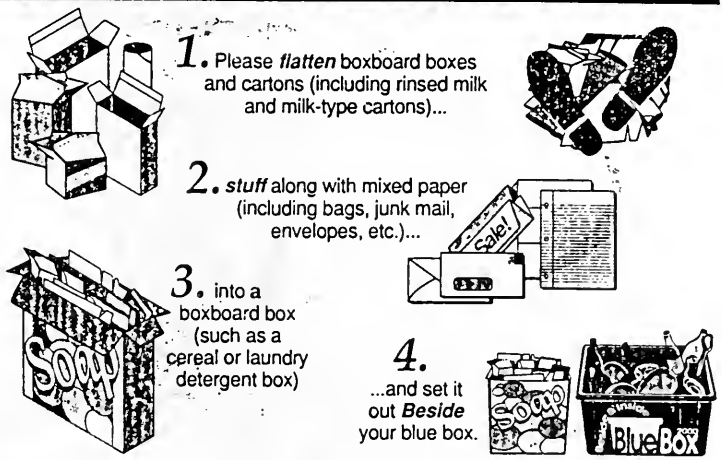
"Problem Card"

Blue Box 2000 Needs Your Help!



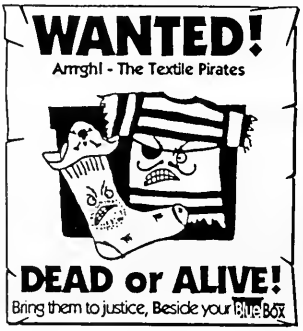
Any questions ? Please call the *Recycling Hotline* (collect) 392-2121

Blue Box 2000 Needs Your Help!



Any questions ? Please call the *Recycling Hotline* (collect) 392-2121

2-sided, 2-colour "Problem Card", dropped in Blue Box.



2"x2" spot ads part of "6 Most Wanted" newspaper campaign.

Blue Box 2000 HERALD

Blue Box 2000 Herald is published periodically by the Centre and South Hastings Waste Management Board with support from the Ontario Ministry of the Environment.

2nd Issue

October 1992

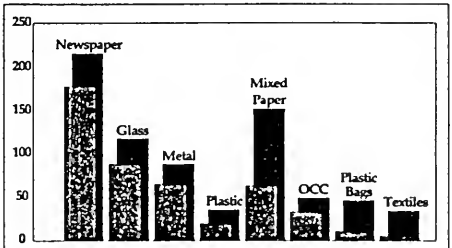
New Materials Evade Capture!

Recent monitoring studies of the Blue Box collection show some puzzling results. Program organizers report that the material captured keeps increasing — by as much as 50% over last year. However, only a small fraction of the available new materials are actually being recycled or 'captured'. In some cases, such as plastic bags and textiles, the capture rate is less than 20%. In comparison, 80 % of the original Blue Box materials are finding their way into the Blue Box.

The new materials or 'Six Most Wanted' are

- Magazines and Catalogues,
- Mixed Household Paper,
- Plastic Bags and Wrap,
- Foam Plastic and Rigid Trays,
- Aluminum Trays and Foil, and
- Textiles.

Bob Argue, Recycling Coordinator, interprets the results in this way. "People simply forget that these materials can go out with the Blue Box. It takes a while before recycling the new materials becomes a household routine the way that recycling of cans and bottles is."



This chart compares the available materials with the captured materials in pounds per household per year

NEWS FLASH!

It has just been reported that several gangs of materials are escaping the BlueBox! These materials are running rampant and finding their way into local landfill sites! Complete Story on page 3

Inside this Issue

Compost Program Heats Up

In less than 3 months, residents of Centre and South Hastings have snapped up over 75% of the free composters available through the composting program. Program organizers are delighted by the response.

Over 15,000 composters have been distributed to date. In some municipalities, more composters were distributed in the first two weeks of the campaign than in the previous two years!

At the beginning of the campaign, weekend depots were set up at local IGA stores in rural areas to distribute the composters. Staff were swamped when hundreds of residents turned out to the depots to take advantage of the free and subsidized composter offer.

Residents of Huntingdon Township are leading in participation; 513 of 766 households in this rural township ordered composters. When people who were already composting before the program started are added to this figure, staff estimate that 80% of Huntingdon residents are composting their kitchen and yard waste. Organizers hope that other municipalities can meet this challenge.

The distribution program was an all-out effort with over 40 workers on the road at any one time making door-to-door visits to householders.

Staff will be busy over the next few weeks delivering composters on order. Until Oct. 31st, people who haven't yet ordered a unit can call the Composting Hotline at 969-1964. After Nov. 1st, call the Recycling/Composting Hotline at 392-2121 for information.

The next phase of the composting program will emphasize education and composting for businesses and institutions.

On-going education programs will ensure that the composters which have been distributed are being properly used. The Hotline is open from 9 to 9, Monday to Saturday to answer questions. As well, two dozen volunteers from throughout Centre and South Hastings are being trained as "Master Composters". They will be available to visit people who are having problems with their composter. And, they will give community workshops on How to Compost

On-site composting offers significant cost savings for medium sized businesses who pay for private waste disposal. Future plans include programs to help businesses and institutions get started in on-site composting.

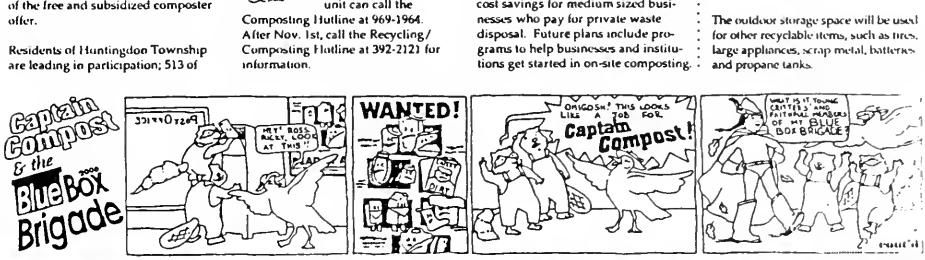
3R's Centre Madoc

Residents in the Madoc area will soon be opening a new and innovative recycling/reuse centre at their landfill site. The 3Rs Centre will include a multi-use building as well as several outdoor storage areas.

In one section of the building people will be able to sort and drop off their recyclables. Another section of the indoor space will be devoted to reuse. Residents can drop off any reusable items or pick up something to take home.

Staff will be on hand to assist residents in sorting material for reuse or recycling, repair broken items for reuse and provide general information on the 3Rs.

The outdoor storage space will be used for other recyclable items, such as tires, large appliances, scrap metal, batteries and propane tanks.



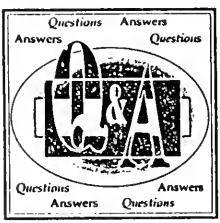
11½" - 17" 4-page, 3-colour tabloid delivered to all households

What's New, Blue?

One of the most exciting parts of chairing the Waste Management Board is seeing the international attention given to our Blue Box 2000 program.

To date, visitors from Texas to Switzerland have toured our recycling plant. Some have even travelled with the trucks on a pick up route.

Initially, visitors are drawn to our program by the sheer volume of materials recycled — 60 tons a day and over 20 different materials move through our recycling plant. When visitors see the program in action, what impresses them even more is the fact that it is a totally integrated system involving recycling and composting in all sectors as well as programs to deal with hazardous waste and encourage waste reduction.



Q *I've read about warehouses full of materials that no one wants. Is there really a market for recyclables?*

A Yes there really is a market but there are two circumstances which fuel the type of story you have been reading.

First, the market for recyclables is like any other market, there are ups and downs. (When the stock market takes a dive no one says we should stop trading in stocks altogether.) The ups and downs in the market for recyclables are complicated by the fact that this is a new field. Every time a new program increases the volume of materials available on the market or new materials are added, there is a temporary glut while the system adjusts.

Similarly, when large new facilities are put in place to make use of recycled materials, there is a temporary shortage until the supply of recyclables catches up. One month you may read about a shortage of materials and the next month read about a glut on the market.

Second, users of recycled materials require 'raw' materials of good quality. For example, one shipment of plastics contaminated with the wrong type of material could spoil a whole production run for a manufacturer. The manufacturer could then refuse to receive further recycled materials from that supplier or to use recycled materials altogether. This could be reported as a lack of markets, when in fact it is a quality control problem.

Incidentally, residents of Centre and South Hastings score tops in recycling. 99.9% of the material recycled in over 20 categories finds a ready market.

At the centre of this integrated system is you, the householder, the storekeeper or business manager. Many of our visitors are skeptical about how much people are willing to participate to make recycling a reality. When they leave they are truly impressed by the level of participation in Centre and South Hastings.

Judging by our visitors' comments, Blue Box 2000 is truly a world class program. Congratulations!

Deagra Thompson
Chair, Waste Management Board

Dear Gabby

Dear Gabby: My wife and I have this little argument going. I say the best way to seal the bag of textiles that we put out for recycling from time to time, is to tie the ends of the plastic bag into a knot. She says the best thing is to close it using one of those little plastic-covered wire wrap things. What do you think?

Signed Knotty Business

Dear Knotty:
I think you should stuff a sock in it. I mean, use an old sock, or any piece of cloth to tie off the bag. (I also think that you and your wife need some outside interests in your life.)

Signed Gabby

Dear Gabby:
I'm graduating from Loyalist and will soon be moving out of the house I share with five other people. My other roommates will be moving on as well. Roger and Gwen will continue to co-habit, but are moving their act to Lanark county. Steve is staying put, here in Belleville, but moving to the far end of town. Steffie is moving, but doesn't know where as yet. (She still has to find herself.) And Graham, well he's a little crackers as well, and is moving to Toronto to become a town planner. (There's some irony there some where.) My question to you, Gabby, is this: who gets the Blue Box?

Signed Lonely and Blue

Dear Lonely & Blue:
Zzzzzzzzzzzzzz.

Signed Gabby.

p.s. After all of the promotion we've done here in Centre and South Hastings on recycling issues — flyers, posters, hotlines, you name it, — after all that, if you can't figure out that the Blue Box stays with the house, I suggest spending another couple of years in school.

Dear Gabby:
What's the difference between high-density polyethylene, polyvinyl chloride and polystyrene?

Signed Just Curious

Dear Curious:
Well to begin with, they're all spelt entirely different. Totally different number of syllables as well. They do have some things in common, however. First, they're all plastics. Secondly, they all have really scary sounding names. (Hey. Answer something for me for once: why do they do that — give plastic compounds these really frightening array of letters? Why don't they have nice names, like say, watermelonvinyl, or muffinethylene?) Finally, they all can and should be recycled.

Signed Gabby

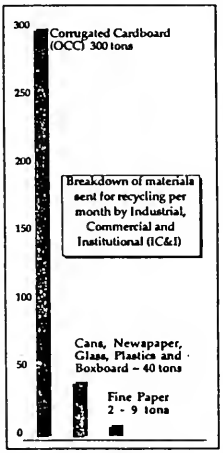
The Bu$iness of Recycling

IC&I *UPDATE* BUSINESSES BACK RECYCLING

(Industrial Commercial and Institutional)

Recent figures from Quinte Regional Recycling show that industrial, commercial and institutional (IC&I) sources are shipping about 350 tons of material each month.

Businesses and institutions use private haulers or deliver the material themselves. To date there has been no charge, but as of Nov. 1st there will be a $25 dollar tipping fee. Those businesses and offices with smaller amounts of recyclable materials can use the Blue Box curbside services for all materials except corrugated cardboard.



Institutions have been quick to participate in recycling too. All area schools and both hospitals have set up recycling programs. Centre and South Hastings was also the first community in Canada to persuade Canada Post to set up recycling in local post offices.

As Sandy Smith, IC&I Co-ordinator points out; "Businesses are recognizing that Good Waste Management is just Good Management. By using waste management techniques, businesses can make better use of materials, increase efficiency and productivity, and just plain save money!"

Most of the recyclable material from businesses and institutions is corrugated cardboard, (OCC), and even more emphasis is being placed on increasing the capture rate of this material. (See article: Cardboard Crisis on pg. 4)

In addition, several new programs will be launched this fall to help businesses recycle other materials. These include programs to;

- encourage all levels of government offices to get full recycling programs underway,
- encourage waste audits through a new publication called, "How to Conduct a Solid Waste Audit",
- support on-site composting for IC&I, and
- run workshops for businesses on how to do a company-wide waste audit and on new waste regulations affecting businesses.

Your Recycling Horoscope

Your Birthday Today

The Moon is in seventh heaven with Venus on the half-shell. Several of those 'cusp' things are in evidence, and that can be good — or bad. All of which means you stand as good a chance as anyone of growing up to be the best recycler on your block. (And that's heady stuff indeed.)

Aries (March 21 - April 19)
You don't need to 'horn' in on the action: anyone can get a free composter.

Taurus (April 20 - May 20)
No bull. You will win big if you make the three R's an everyday part of your life.

Gemini (May 21 - June 20)
Turn over a new leaf. Get an yardwaste composter. That's two — two — two bins in one.

Cancer (June 21 - July 22)
Come out of your shell... dispose of hazardous household waste safely and properly.

Leo (July 23 - August 22)
You can help prevent an environmental Cat-tastrophe by recycling on a regular basis.

Virgo (August 23 - September 22)
Veni. Vici. Virgo. I came. I saw. I recycled.

Libra (September 23 - October 22)
You be the judge: which of the three R's is most important.

Scorpio (October 23 - November 21)
Take the 'sting' out of consumerism. Reduce, reuse and recycle.

Sagittarius (November 22 -December 21)
You're so self-centaured. Take careful aim, and put the planet before yourself.

Capricorn (December 22 - January 19)
Don't leave your cans and other recyclables for the goat. Make sure they are set out with your Blue Box.

Aquarius (January 20 - February 18)
Water, water everywhere — but if we're not careful with our hazardous wastes, there won't be a safe drop left to drink.

Pisces (February 19 - March 20)
Reduce, re-use and recycle, for the halibut. And for the giraffe and the aardvark and all other living things.

NEWS FLASH!

THE SIX MOST WANTED! DEAD or ALIVE!

It has just been reported that several gangs of materials are escaping the Blue Box! These materials are running rampant and finding their way into local landfill sites! Extra vigilance is called for from every citizen of Centre and South Hastings to ensure that these materials meet justice in the Blue Box Recycling program!

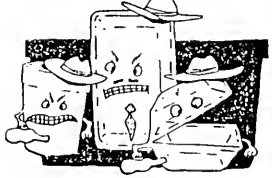
Known as the Six Most Wanted, they are

- The Foam Plastic Gang, alias foam plastic and rigid polystyrene,
- The Foil Fiends, alias aluminum trays and foil,
- The Textile Pirates, alias clothing and textiles,
- The Boxboard Banditos, alias boxboard and household paper,
- The Magazine Desperados, alias glossy magazines and catalogues
- Plastic Bag Double Agents, alias plastic bags.

Each one of the Six Most Wanted has several disguises and a lengthy record. But, on the positive side, once they're captured, they have great potential for rehabilitation as recycled materials.

To help you identify the Six Most Wanted and turn them in to your Blue Box, the Herald has compiled this profile of each of the six fugitive materials.

The Foam Plastic Gang

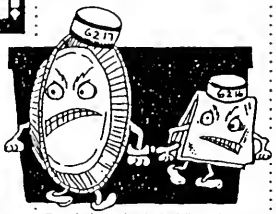


Description Polystyrene is one of the most difficult materials to track, since it can appear both as white foam plastic and as a clear, or coloured, brittle plashc. Coffee cups, foam packaging, trays, "popcorn", as well as rigid trays from cookie bags and chocolate boxes are all part of this gang.

Record: Polystyrene is a very light material; the average household produces only 8.6 lbs per year, yet this material takes up a large volume.

Potential: At the local recycling plant polystyrene is separated from other materials and stored in large bins. When enough material has collected, it is compressed, baked and shipped to a new polystyrene recycling plant in Mississauga

The Foil Fiends



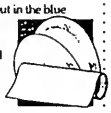
Description: Aluminum foil may be disguised as pie plates, frozen food trays or plain foil wrap.

Record: Compared to other materials, there is not much aluminum in the waste stream. The average household in Centre and South Hastings uses only 3.7 lbs of aluminum trays and foil each year.

Potential: Despite the small amount of aluminum in the waste stream, it is one of the most valuable recyclable materials. Aluminum is very expensive to produce and a lot of that cost is in energy. Recycled aluminum beverage cans save 95% of the energy used to produce the can in the first place.

At the recycling plant, aluminum which is put out with the blue box is separated from steel cans on a magnetic conveyor belt. After it is crushed and baled, the material is shipped to an aluminum manufacturing plant.

Caution: aluminum must be clean of food scraps before it is put in the blue box. Aluminum that is laminated to other materials, e.g., metalized chip bags or candy wrappers, is not recyclable.



The Textile Pirates

Description Textiles include all types of clothing as well as sheets, draperies and other worn household linens.

Record: Households in Centre and South Hastings dispose of about 34 lbs of used clothing and other textiles each year.

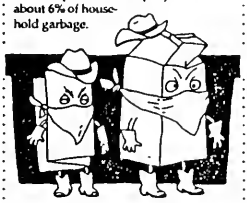
Potential: Of all the recyclable materials, clothing and textiles have the most varied opportunities after capture. In Centre and South Hastings, all textiles are picked up by Tri-County Environmental Training Centre, a local non-profit operation. There the clothing is carefully sorted. Some is sold for reuse locally, while most of the clothing is baled for shipment and sale in the third world. Cotton items that are no longer serviceable are trimmed and sold for use as industrial wipes.

Caution: Vinyl or leather clothing and shoes cannot be recycled with textiles.

Boxboard Banditos

Description: Boxboard may appear as cereal or shoe boxes, milk or juice cartons or detergent boxes. Junk mail and envelopes are obvious members of this gang, but household paper can also be disguised as paper bags, egg cartons, cardboard tubes, and clean paper packaging such as flour bags.

Record: Boxboard and household paper together represent about 119 lbs of waste per household per year or about 6% of household garbage.



Potential: After it is captured and put out with your Blue Box, household paper is trucked to the recycling plant where it is sorted for contaminants and baled for shipment to paper mills. Most of our boxboard is shipped to Strathcona Paper in Napanee where it is turned into detergent boxes, only to start the cycle again!

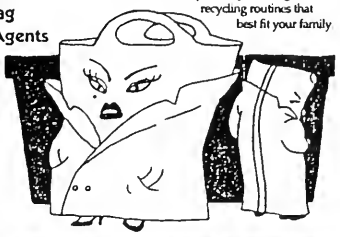
Magazine Desperados

Description: This group of materials includes all glossy publications such as catalogues, calendars and brochures as well as magazines.

Record: Households in Centre and South Hastings generate, on average, 20 lbs of magazines each year.

Potential: Once thought of as an incorrigible material, glossy magazines are now high on the most wanted list because they actually help make newspaper recycling possible. The clay coated magazine stock is used in the newspaper de-inking mills to remove contaminants during the de-inking process. Bales of magazines are finding a ready market at newsprint mills.

Plastic Bag Double Agents



Description: This group of materials includes more than just grocery bags; clean milk pouches, bread bags, dry cleaning bags, frozen vegetable bags and the outer plastic wrapping from paper towels are all on the wanted list.

Record: Plastic bags and film plastic account for 2.12% of the residential waste stream by weight. The average household generates about 46 lbs each year. Plastic bags take up a lot of volume and don't break down.

Potential: Plastic bags are separated at the local plant, then baled and shipped to a plastics recycling company.

Caution: Make sure any plastic you capture is clean and not contaminated with food waste, stretch wrap, vinyls, rubber gloves or balloons.

Household Tips:

Here are some tips to help you capture your share of the Six Most Wanted.

Magazines tend to collect in the living room or family room. Designate a basket or drawer in a handy place as the collection point for your old magazines.

Paper collects in every room. Turn your waste baskets into paper baskets and locate just one basket for waste in a central spot on each floor in the house. That way, it's easier for people to recycle than it is for them to throw something in the garbage. Save laundry detergent boxes; stuff flattened boxboard, milk cartons, junk mail and other household paper in them. When the box is full, just set it out with your other recyclables.

It's easiest to capture **textiles** at the beginning of a new season when people check over their wardrobe. For the rest of the year, keep a plastic bag close to where the laundry is sorted, to collect worn items as you discover them.

Aluminum, and polystyrene are most often found in the kitchen and can be put directly in the Blue Box, even if there's only a small quantity.

Plastic bags should be saved until you have a bag full. Again, the kitchen is the most obvious place to store your bag of bags. A bag holder which fits on the inside of a cupboard door or an old step-on garbage can will keep your bags out of sight until you have enough to set out with the Blue Box.

As you can see from these tips, the key to recycling is to make it easy and convenient. You can easily adapt these ideas or better yet, use your imagination to find recycling routines that best fit your family.

CARDBOARD CRISIS!

OCC or old corrugated cardboard represents over 85% of the recycled material currently delivered by businesses and institutions in the area. But the 300 tons of OCC collected each month is only the tip of the iceberg. It is estimated that more than 6000 tons of OCC could be diverted from landfill each year in Centre and South Hastings.

And, because OCC is a very light material, the actual impact on landfill is even greater. One ton of OCC equals the volume of 5.7 tons of other garbage. So, keeping OCC out of landfill is critical to extending a landfill's life span.

Households can put corrugated cardboard out with the bluebox as long as it is flattened into bundles no bigger than 30" x 30" x 8". Businesses, however, produce too much for the recycling trucks to handle and so must find other options. These could include setting up separate collection systems, depots to handle cardboard, and banning cardboard at landfill sites.

Larger businesses and institutions use private haulers to take their OCC to the recycling depot. Medium sized businesses may not have enough OCC to warrant private haulage but they produce more than the blue box trucks can handle.

As a result, many medium sized businesses are still putting their cardboard out for the regular municipal garbage collection.

Municipalities could take the initiative to fill this gap. Three options have been identified;

1. Ban OCC from landfill and from the general garbage collection, leaving the problem up to the private sector to handle

2. Provide a separate curbside collection of OCC - expensive but very effective.

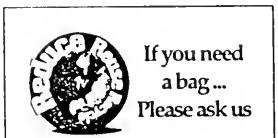
3. Set up a depot handling system. This would require a truck, dumpsters, roll-off, or a baler. Waste producers would bring the OCC to the depot and the municipality would haul it to the recycler. A ban at landfill and from general garbage collection would be needed too

"Save A Bag" Campaign Launched

After September 30th, don't be surprised if the checkout cashier at your local supermarket pauses before packing your groceries and asks,"Would you like a bag?"

It's all part of the "Save A Bag" campaign launched by the Waste Reduction Office. As Alfred Von Mirbach describes it, "We started the campaign to encourage a reduction in the use of plastic or paper bags. Cashiers in participating stores will ask customers if they want a bag, rather than assume that they do."

Participating stores will display the campaign sticker that says, "If you need a bag ... Please ask us." in a prominent position on the counter or cash register.



If your local store hasn't yet signed on to the campaign, they can obtain stickers and further information by calling Alfred Von Mirbach at the Recycling Hotline, 392-2121.

And, of course, any bags which are torn and no longer reusable can still be recycled with your Blue Box!

Fall & Winter Composting

reprinted from the Herald
by Martin Tucker

One of the myths of composting is that you can't continue doing it through the winter. Nothing could be farther from the truth! With a little foresight and the proper location for your composter, you can compost year 'round.

The most important consideration in locating your composter is convenience. It should be easy to get to regardless of the season. It's very common for people to stop composting during the winter simply because it's too difficult to get the kitchen scraps out to the composter. Consider using a kitchen bucket to collect your food scraps in. This will keep your visits to the composter to a minimum (about every 5-7 days).

When locating your composter, find a level spot that is well-drained. Whether your composter is in the sun or shade is not really very important as the heat in the composter is generated from within. What is important is that you are satisfied with the placement and that you will be encouraged to keep on composting regardless of the season.

During cold temperatures, the composting process may slow or even stop and the contents of the composter may freeze. This makes it very important to remove finished compost in the fall so that the composter will be as empty as possible when winter sets in. You will then be sure to have plenty of room in your composter for winter use.

You have undoubtedly heard of the importance of adding some "green" and some "brown" material into your composter. A common complaint during the winter is that people have no access to the "browns". An easy remedy to this problem is to stockpile a few garbage bags of dry leaves during the fall when they are plentiful. If the leaves are collected dry and kept dry throughout the winter, they can be added to the composter a bit at a time as "brown" material, layered with your "green" kitchen scraps.

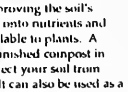
"What can I do with all those leaves?" is a question that many people ask. The average backyard composter is obviously too small to hold them all but conscientious householders don't want to send them to the dump either.

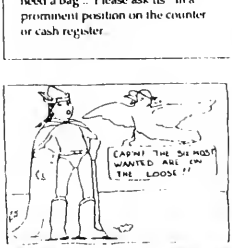
Try making a separate compost pile strictly for your leaves. An out-of-the-way corner of the yard would be ideal for this. You could wrap some snow fence or wire mesh into a cylinder to hold the leaves.

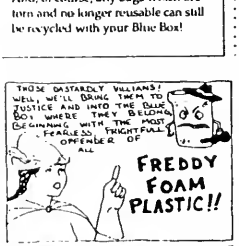
Mulching the leaves will reduce their volume drastically as well as speed up the process of decomposition. By the following autumn, you will have leaf mould which makes an excellent soil conditioner or winter mulch.

If you want a more durable container, a variety of yardwaste composters are still available through the Centre and South Hastings Compost Program. These units are larger than the average backyard composter and are ideal for people who want to compost more of their yardwaste.

Once you have removed the finished compost from your composter, it has many uses in the garden. It can be used as a topdressing in your vegetable garden or flower beds. This will add valuable nutrients to the soil. Compost also works as an excellent conditioner, improving the soil's capacity to hold onto nutrients and make them available to plants. A topdressing of finished compost in the fall will protect your soil from harsh winters. It can also be used as a natural fertilizer when spread evenly across the lawn.







YIMBY

Yes In My Back Yard

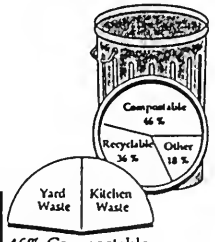
Compost Hotline
613-969-1964

Centre & South Hastings Waste Management Board presents...

Free Composters!

Everyone knows about a NIMBY (Not In My Back Yard). That's somebody who passes their waste problems onto somebody else. Well, now is your chance to become one of the growing number of YIMBY's - People who are willing to do something about all the kitchen and yard waste that gets thrown out. People who say YES In My Back Yard!

Nearly half
of Residential Garbage
can be Composted



46% Compostable

FREE Composters are being delivered to your door throughout this summer!

Centre & South Hastings Waste Management is offering you a FREE composter. Alternative composters with special features, yardwaste composters and vermi (worm) composters are available for a small charge. Composting support programs to be announced. Let's reduce the amount of garbage we send to the landfill. BE A YIMBY!

Have composter will travel! Beginning early July!

We'll deliver a free basic composter or an Earth Machine right to your door.

Can't wait to get your composter?!

Please look over your choice of composters. Our staff at your nearest depot will be pleased to help you choose the composter that is right for you!

No need to reserve. No advance orders.

BELLEVILLE: 45 Wilson Ave. (Sidney/Moira) Mon.-Thurs. 2-9, Sat.10-4
TRENTON: Public Works, 30 Pelham St. (Front/Metcalfe) Mon.-Thurs. 5-8, Sat. 10-2
FOXBORO IGA: June 19-27, 10 a.m. to store closing
MADOC, MARMORA, TWEED IGA: Fri.,, June 19 & 26, 4 to closing, Sat., June 20 & 27, 10 a.m. to store closing
MELROSE: Tyendinaga Twp. Office, June 19 & 26, 4-8, June 20 & 27, 10-4

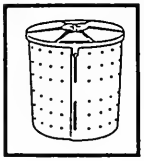
DELIVERED OR PICK-UP

BASIC BACKYARD
12 cu. ft./Family Size
100% Canadian reused high density plastic
No assembly/screw top lid
Recessed molded handles
FREE

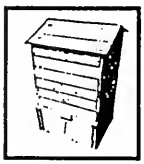
EARTH MACHINE
15 cu. ft./Family Size
Made with recycled plastic
Twist lock lid and bottom access door
Conical shape
$12.00

COMPOSTART KITCHEN CATCHER
6 litre pail with airtight lid and handle
White with colourful attractive design
Illustrated composting instructions
Easy to empty and clean
$2.00

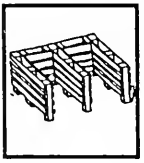
ONLY AVAILABLE AT DEPOT



ECOBALANCE YARDWASTE
20 cu. ft./100% recycled plastic
Easy disassembly for access to pile
Convenient access flap & full hinge lid
Easy to assemble
$25.00



CEDARWOOD HOME & YARDWASTE
12 & 27 cu. ft.
Pre-consumer reclaimed cedarwood
Bottom access door/full access panel
Attractive and sturdy
$18. & $35.00



SKID ROW YARDWASTE COMPOSTER
100 cu. ft. (for large lot and family)
Reused oak shipping skids
Delivered and installed at your home
Order by phone
$20.00

For speedy service, please complete and give to the depot staff. Do not mail.

HOUSEHOLDER'S NAME:

ADDRESS/LOT & CON.:

TOWN/TOWNSHIP:

POSTAL CODE: TELEPHONE:

OFFICE USE:

* Municipal subsidy applies to 1st unit only. Small charge for 2nd unit. Max. 2 units/household.

Sponsored by Centre and South Hastings Waste Management Board

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